COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

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Co-operating with Hammond Commission

PERHAPS nothing has contributed so much to the excellent start made by the U. S. Coal Commission as the very frank admission by its members that they know nothing about the problem they have had thrust upon them and their invitation to both the miners and the operators to jump in and help educate them. Meetings were held last week in order with representatives of the United Mine Workers, the soft-coal operators and the anthracite producers. Each was urged freely to give advice as to how the duties and functions of the commission as laid down by the law should be carried out.

A committee of the bituminous-coal operators seeking to represent not the National Association alone but the industry generally has offered full co-operation. The National Association has levied a special assessment on its members, to which others are to be asked to contribute, to raise a substantial fund to supplement that given the commission by law. That is to say, the bituminous-coal operators propose to contribute the money to finance important research work for the commission, the money to be spent by the operators at the direction of or in accordance with the suggestions of the commission. This, of course, is perfectly proper, for it simply amounts to carrying a step further than the mine office the collection of data requested by the government. The decision to devote its time and money to the assistance of the Coal Commission rather than fight it, to accept it as something that will be of ultimate benefit to the coal industry rather than looking on its activities as detrimental, is the most forward-looking step the National Coal Association has taken.

The United Mine Workers have taken the request of the commission in good faith and have already supplied a 7-page brief expressing their ideas as to the direction that certain parts of the investigation should take. They have suggested, for instance, that careful investigation should be made of absentee ownership, the spread between mine price and delivered price, the possible connection between coal companies and machinery manufacturers, discrimination by railroads in the placement of railroad cars at the mines, thus producing irregular employment, middleman's profits and of coal storage.

On the whole, this first document for the record (which we are pleased to note was broadcast to the press) is a series of suggestive questions and implications such as might easily have been compiled by any newspaperman or any citizen who had followed the subject in recent months. This communication and the others that doubtless will follow from the same source will serve to keep the public and the commission posted on what questions should be answered. Its apparent guilelessness detracts none from its interest and value.

The commission has a long, hard task ahead of it, and the very evident willingness of all parties at interest to help without restraint will make its work more certain of success. The friendly spirit that seems to prevail augurs for a happy ending.

Effect of American Demand On the British Coal Trade

UNDER the caption "The End of the American Coal Spurt" the editor of *The Compendium*, London, summarizes the effect on the British coal trade of the recent demand on this side for English coal. It is pointed out that buyers on this side did not leave the British long in doubt of their intention of taking only the coal that was urgently needed, and that by the middle of September inquiry was practically at an end and negotiations in progress were stopped.

As has been currently recorded in our market columns, the American demand caused a spurt in British coal production, forcing the weekly output well above 5,000,000 tons from around 4,500,000 tons. Exports climbed from 4,793,000 gross tons in June to 6,146,000 tons in August. Later figures are not as yet available. From practically none in June, the portion of these totals sent to this country rose to 930,913 tons in August. Our own figures show that 606,000 tons reached here during that month.

Prices were affected by the sudden onslaught of American buyers. Increases in quotations ranged from 2s. to 6s. 9d. per ton, according to quality. The peak in prices was reached in August, a marked slump being recorded in September. Ocean freights reached their peak in July. When the buying from this side began it soon developed that ships and not coal would be the limiting factor. The charter market responded with jumps of a shilling or more, only to subside when vessels from all over the Atlantic were offered for this trade.

On the whole the British coal industry has much for which to be thankful in the threatened coal shortage on this side inasmuch as it provided a sudden and unexpected market for several million tons of coal. The British coal industry had been in the doldrums for many months, wages had sunk to the legal minimum, prices were dropping and as they dropped the usual buyers were holding off waiting for the bottom. Mines had been closed and the men were suffering—even at the minimum wage the operators could not produce and find a market for their product. But when utilities, railroads and free-lance traders on this side drained off the surplus supplies and called for more, the coal industry in Great Britain took on new life. Continental buyers woke up to demand their share and the trade became brisk.

The impetus has not been lost. The strike on this side not only made a market on this side but rescued the miner on the other side from a winter of dullness.

Excessive Taxation of Coal Lands

ANTHRACITE dealers and consumers, to say nothing of mine operators, would do well to study the evolution of a movement for the excessive taxation of coal lands, reported elsewhere in this issue. There is no desire to alarm, but there are things worse than being an alarmist—for example, being an optimist so cocksure that the most patent signs of the times are ignored or explained away.

The plain facts are that the anthracite industry in the lower field, where nearly all the reserves lie, is being subjected to the raids of taxation leeches whose program, if carried out, and whose underlying philosophy, if generally adopted, will speedily put the hard-coal business on the rocks. The present assault is, in many ways, the most serious of all those directed at the anthracite interests in the unremitting warfare of the last twenty years.

To value a property for taxation at ten or twelve times what was paid for it or for what it will bring in the open market is nothing short of a levy on capital. It might be heard without surprise as a report from Russia, but as a report from supposedly conservative Pennsylvania it comes as a shock which should serve as a warning. A precedent which is made in the case of anthracite lands can be applied to other real estate, if not indeed to all other property.

Consumers of anthracite in markets like New York and New England, justly aroused by the Pennsylvania State tax on anthracite tonnage, should by no means ignore the implications in the Schuylkill County situation. There a community of perhaps 250,000 which last year collected 65c. from coal-land owners on every dollar raised for general county purposes this year calmly proposes to increase the revenue 50 per cent and to collect 89c. from coal lands and only 11c. from the general community. The Schuylkill County proposals involve a much greater amount per ton than does the Williams tonnage tax of 1921, against which public officers in anthracite-consuming states entered a protest.

Consider the cumulative effects of Pennsylvania public policy with respect to the anthracite industry, the only American industry peculiar to that state. As long ago as 1916 Governor Brumbaugh's commission reported that new legislation and continuous investigation were among the causes for increasing coal prices. Yet the Pennsylvania Legislature has not only put a tonnage tax on anthracite—the only Pennsylvania product so treated—but it has burdened hard coal with hampering legislation like the Kohler act and the Fowler act, purporting to prevent mine caves, and raising millions, by another tonnage tax, to make good cave damage. Frankly discriminatory legislation of this character has heartened all those like the commissioners of Schuylkill and Northumberland counties to put all the traffic will bear on the backs of the coal companies in the shape of taxes.

One producing company in the upper region gives a rough estimate that its total tax bill—federal, state and local—amounts to about 80c. per ton of production. One producing company in Northumberland County last year paid, as county and municipal taxes alone, an amount equivalent to at least 25c. per ton. The new idea in taxation, if carried out, would double that figure this year.

These things are bad enough, but there is an even more dangerous idea buried in this systematic bleeding of anthracite owners. It is the implied, and even expressed, determination to tax in the present, potential wealth which should be, and is being, conserved for the future. If adopted, it means farewell to the sound policy of conserving natural resources, adopted by the federal government less than twenty years ago.

Anthracite is a stabilized industry. In normal times a year's production, working at approximately full time, merely meets the year's demand. There is normally no shortage in supply and no carry-over to speak of. If the hope of the shortsighted, with respect to excessive taxation, is carried out, and lands now held as reserves are forced into premature operation, the result will be too many mines, too many men employed, broken time, wildly fluctuating prices and alternate dearth and plethora of supply. In short, the tendency in this taxation scheme, whether deliberately intended or not, will be to bring about in the hard-coal industry the exact condition of overdevelopment which is considered one of the main faults of the bituminous industry.

When the President's investigating commission gets around to anthracite it might with profit delve into this matter of taxation as exemplified in Schuylkill and other hard-coal counties.

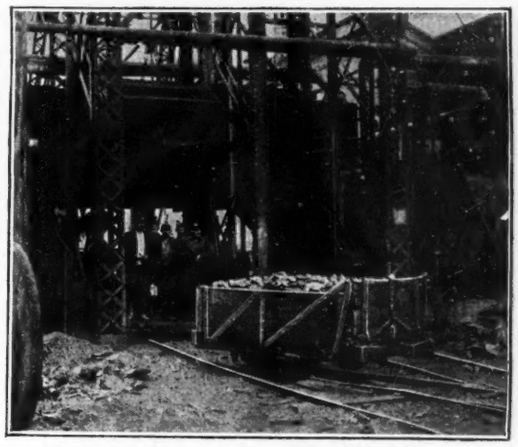
No Assigned-Car Decision

NO IMPORTANT significance is attached to the action of the Supreme Court in the Corona coal case. Acting on the precedent of the Lambert Run case, the court affirmed the decision of the District Court of northern Alabama in dismissing the suit of the Corona Coal Co. against the Southern Railway. No action was taken by the Supreme Court which in any way passes on the merits of the question involved in the practice of assigning cars. The court's action involved only the matter of jurisdiction. An effort had been made to bring the Corona case to the Supreme Court in such form that the country's highest tribunal could deal with the merits of the question, but the case reached the Supreme Court with exactly the same points involved, and the court in its ruling simply applied its action taken in the Lambert Run case.

The case arose during the car shortage of 1920 following the Interstate Commerce Commission's order modifying Rule 8 to define private cars and cars for railroad coal as assigned cars and all others as unassigned cars. The Corona company filed suit in the State Circuit Court at Birmingham, alleging discrimination against it in not being given a pro rata of assigned cars under the rating system after the company had offered to sell coal to railroads at a competitive figure. A temporary injunction was issued by the state court. The railroad company obtained a transfer to the United States District Court. This court dissolved the injunction and dismissed the suit on the ground that relief should have been sought from the Interstate Commerce Commission; that the attack was against the assigned-car rule and not against its application, it not having been alleged that the railroad delivered assigned cars contrary to the rule or that the order was unequally applied. The District Court held in effect that the railroad had not discriminated because it had delivered assigned cars according to instructions and had distributed unassigned cars among the mines in proportion to their ratings, although the supply was insufficient to meet fully the ratings.

How Rearrangement of Track Raised the Tonnage Of an Anthracite Colliery

By Dever C. Ashmead*
Kingston, Pa.



After Track Revision and Other Provisions Legitts Creek Coal Co. Dispenses with Five Men and One Mule and Quadruples Tonnage—Savings in a Year's Running Pays for All Reconstruction

DOES your track hold down your tonnage? Are you wasting effort in trying to hold up your output under unfavorable circumstances where a slight revision of the trackage as to line, grade and position of switches would not only make it unnecessary in handling trips to have close supervision and a nice co-operation between the men by whom the cars were being handled but would afford an increase in tonnage in a manner almost automatic? Wherever delays are occurring the subject is one worthy of consideration. An ounce of planning of a new track layout may save a full pound of effort in handling a badly adjusted track and give better service into the bargain.

The neck of a bottle determines the quantity of liquid that can be poured from it, or rather it determines the rate of discharge. The shaft or drift mouth, whichever it may be, together with the track arrangement at the bottom or the top of the shaft, constitutes the real neck of almost any mine.

Obstructions or ill-conceived track arrangements may limit the output of a colliery beyond hope of betterment, for no more coal can be prepared and shipped than can be delivered to the outside or to the breaker. A mine may be able to produce and load into mine cars 2,000 tons a day, but if the track arrangements are such that only 500 tons a day can be sent to the surface then the capacity of the mine is limited to that quantity.

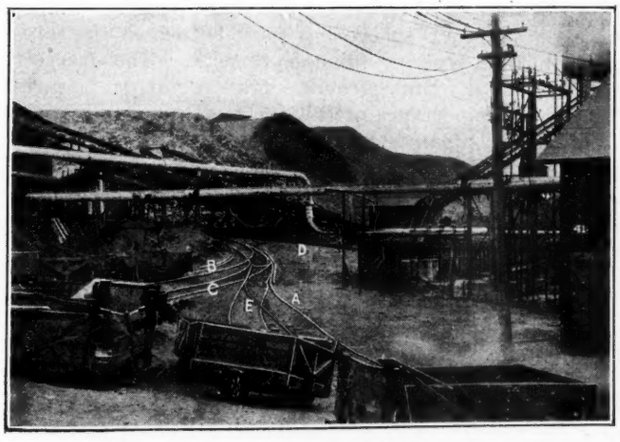
About three years ago the Legitts Creek Coal Co. purchased the mine at Scranton, Pa., that it is now operating. At the time of purchase the output was about 200 mine cars of coal and forty of rock. The mine was awaiting the happy thought as to surface tracks that would bring its tonnage to a profitable figure, for a small tonnage means a heavy cost. Previous foremen had labored in vain against the insuperable difficulties of a faulty layout.

The coal was brought up through three openings—two shafts and one slope. One of the shafts is right at the foot of the dragline conveyor which leads to the breaker. The other is about 200 ft. distant. The slope mouth was about 400 ft. from the second shaft and its top was about 50 ft. lower than the elevation of the top of the shaft. The coal from this slope was taken on the surface to a short tunnel and through this tunnel to the shaft, where it was hoisted 50 ft. to the surface.

From the shaft to the foot of the dragline conveyor that feeds the breaker is about 200 ft., as has already been stated. About 100 ft. from the shaft the rock track left the main roadway. The grade on this track was insufficient to cause the rock cars to clear the coal cars, and the rock cars collected on the track between the junction point and the top of the shaft. The map shows at this point only the new tracks and the old rock switch consequently is not visible, but it was located at the point marked *A* on the plan. This layout naturally caused congestion and reduced the quantity of coal that could be hoisted, as no more coal could be handled on the surface than could be passed over the track to the dump. At No. 2 shaft no rock at all could be hoisted, as there was no connection between this shaft and the rock dump. Therefore all this rock had either to be hauled underground to No. 3 shaft or unloaded by hand underground, which latter was a slow, expensive operation and one that caused congestion of the mine tracks.

At No. 2 shaft the distance from the shaft to the

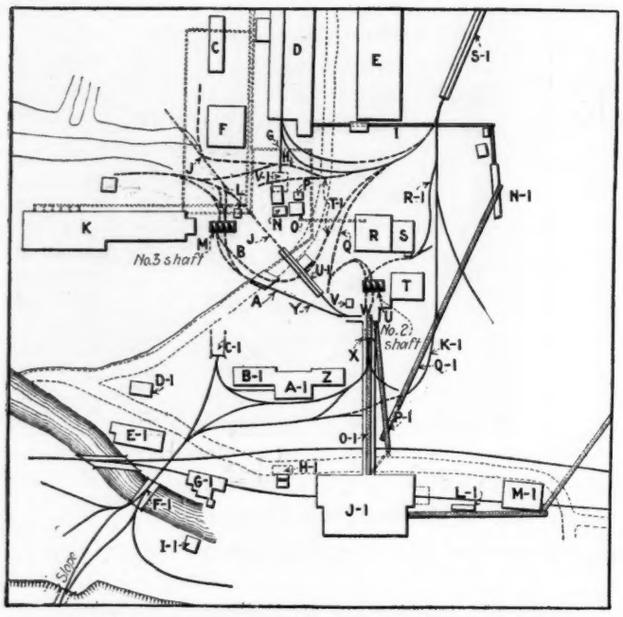
*Anthracite Field Editor, *Coal Age*.



ARRANGEMENT OF ROCK TRACKS FROM SHAFTS

A, loaded rock track from No. 2 shaft; *B*, empty rock-car track to No. 3 shaft; *C*, track to ash pocket; *D*, empty rock-car track to No. 2 shaft; *E*, loaded rock-car track from No. 3 shaft.

Note—Headpiece shows the new crossover at the top of No. 3 shaft. This crossover was introduced for the use of the rock cars. By its use these cars immediately clear the loaded coal cars, allowing them to be sent immediately to the dump.



PLAN OF TRACKS AT LEGITTS CREEK COLLIERY

A, point where former rock track started; *B*, point where rock track now starts from loaded track; *C*, storehouse; *D*, boiler plant; *E*, abandoned boiler plant; *F*, No. 3 shaft engine house; *G*, ash conveyor; *H*, empty-car track from rock dump; *I*, fuel conveyor; *J*, empty-car track; *K*, compressor house; *L*, head shanty; *M*, No. 3 shaft; *N*, storage house; *O*, fire-pump house; *P*, hose house; *Q*, rock dump; *R*, engine house of No. 2 shaft; *S*, generator plant; *T*, No. 2 fan house; *U*, No. 2 shaft; *V*, docking shanty; *W*, dump; *X*, No. 2 tunnel; *Y*, loaded cars; *Z*, lumber shed; *A-1*, carpenter shop; *B-1*, blacksmith shop; *C-1*, No. 3 tunnel; *D-1*, hospital; *E-1*, office; *F-1*, bridge; *G-1*, breaker light scale; *H-1*, retail sales scales; *I-1*, slope engine house; *J-1*, breaker, *K-1*, supply track; *L-1*, inspection office; *M-1*, loaded scale and shipping office; *N-1*, hopper; *O-1*, chain conveyor; *P-1*, condemned-coal conveyor; *Q-1*, fuel conveyor; *R-1*, empty car track from rock dump; *S-1*, plane to rock dump; *T-1*, rock track; *U-1*, car haul; *V-1*, ash pocket.

dump is about 15 ft. and the cars were run off the cage, dumped and immediately hauled back by a small hoist.

The ashes from the boiler plant are run out on the rock dump and disposed of at that point. These cars also tended to cause congestion at the foot of the plane to the rock dump and therefore delayed the handling of the rock cars.

With conditions such as these the output of the colliery could not be greatly increased by any degree of supervision, co-operation or dexterity. Some track changes were absolutely necessary. One of the great difficulties was the lack of space around the tops of the shafts. The locations of these shafts, and those of the bottom of the plane to the rock dump and the coal dump were alike fixed almost beyond revision. This meant that the ends of the tracks could not be moved whatever other changes might be made.

The handling of the rock was the most serious trouble encountered, but this difficulty was corrected with comparative ease. The rock track which connected with the loaded coal-car track at *A* was changed to connect at *B*, and this gave about 100 ft. more rock track. The grade was increased so that the rock cars would run away from the shaft by gravity. This greatly relieved the congestion at this point.

At No. 2 shaft a switchback was provided so that rock cars could be hoisted at this shaft (with the end gate facing the breaker as usual), run through the switchback and then to the foot of the rock plane with the end gate now facing the rock dump and away from the breaker. The rock cars from this shaft are removed from the cage in the opposite direction from the coal cars and now handle themselves by gravity. A new track was laid from the rock bank to No. 2 shaft for the return of the empty mine cars, and the way it connects with the cage track likewise is shown in the accompanying plan.

Another cause of congestion was the handling of ashes from the boiler house. In order to meet the difficulty a dragline conveyor was built to remove the ashes from the ash pit and convey them to an ash pocket which will hold as much as will accumulate in two days. These ashes can now be handled when there is not much rock, and their handling does not interfere in any way with the production of coal. This ash arrangement has another advantage in that it is not necessary now to handle ashes during Sundays and nights, for the ashes can be stored in the ash pocket, and thus it is not necessary to pay men to haul ashes on those occasions.

Another important change was in the empty track from the coal dump to No. 3 shaft. Here the car haul was raised 3 ft., and the gradient from the top of the car haul to the shaft thus increased, so that the cars move more freely. The curves were taken out, and the services of a driver and mule were eliminated.

The method of handling the cars from the slope to the surface also was changed. Instead of bringing them all the way to the surface through the slope they came only to the Four-Foot bed. They are then taken underground to No. 3 shaft and then hauled to the surface by that shaft. This has saved a surface haul such as interferes with operation in the winter. It also saves a mule and a driver on the surface.

The method of handling supplies to the mine also was changed. Instead of sending them into the tunnel that has been mentioned a new track was laid to connect with the empty car track to No. 2 shaft, the supplies being hauled to the shaft level by a small hoist.

The changes that have been outlined were, on the whole, inexpensive, but they saved five men and one mule. Therefore the saving in labor alone in a year's time would about pay for the cost of the changes, but not only is money being saved but the obstruction to the neck of the bottle was removed, and the output of the mine could be increased.

After three years of operation the output of the mine has risen from 200 cars of coal and forty cars of rock to 800 cars of coal and 100 cars of rock.

Improved Mine Car Decreases Costs

By L. C. Crewe*

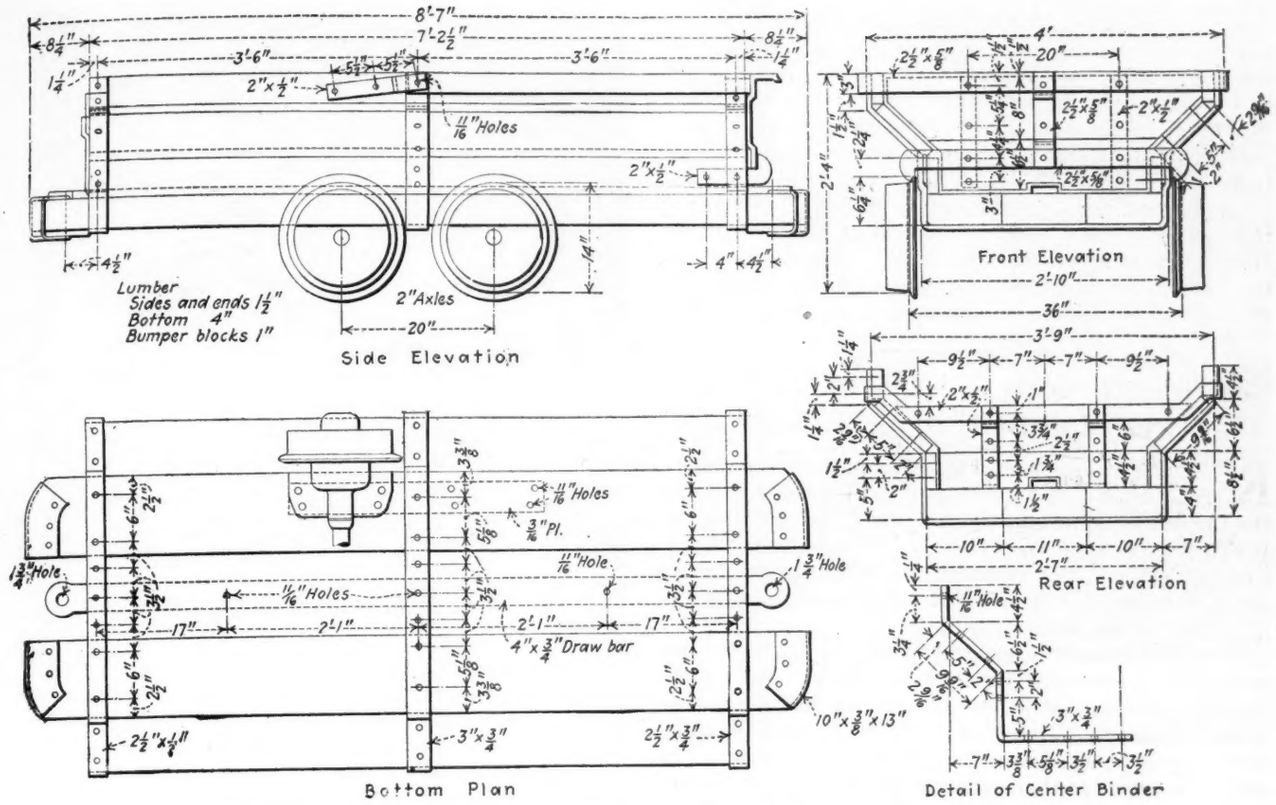
EVER since mining began mine cars have been mine cars, yet each succeeding year witnesses improvement in this type of mine equipment. The interest manifested in underground transportation clearly denotes the importance of this phase of coal production.

In the accompanying illustrations Fig. 1 shows the car used until recently by the La Follette Coal & Iron Co. The Rex coal bed worked by this firm averages 42 in. in thickness and, as may be seen, this car was 28 in. high above the rail and held an average of 1,840 lb. Its weight was 1,640 lb.

Fig. 2 shows the new car designed by this company's engineers and now used in place of that shown in Fig. 1. In gage, wheelbase and length over bumpers the new car is identical with the old; its over-all height, however, is 3 in. less and its width 8 in. greater. The new car weighs 1,820 lb. and its capacity is 2,540 lb.

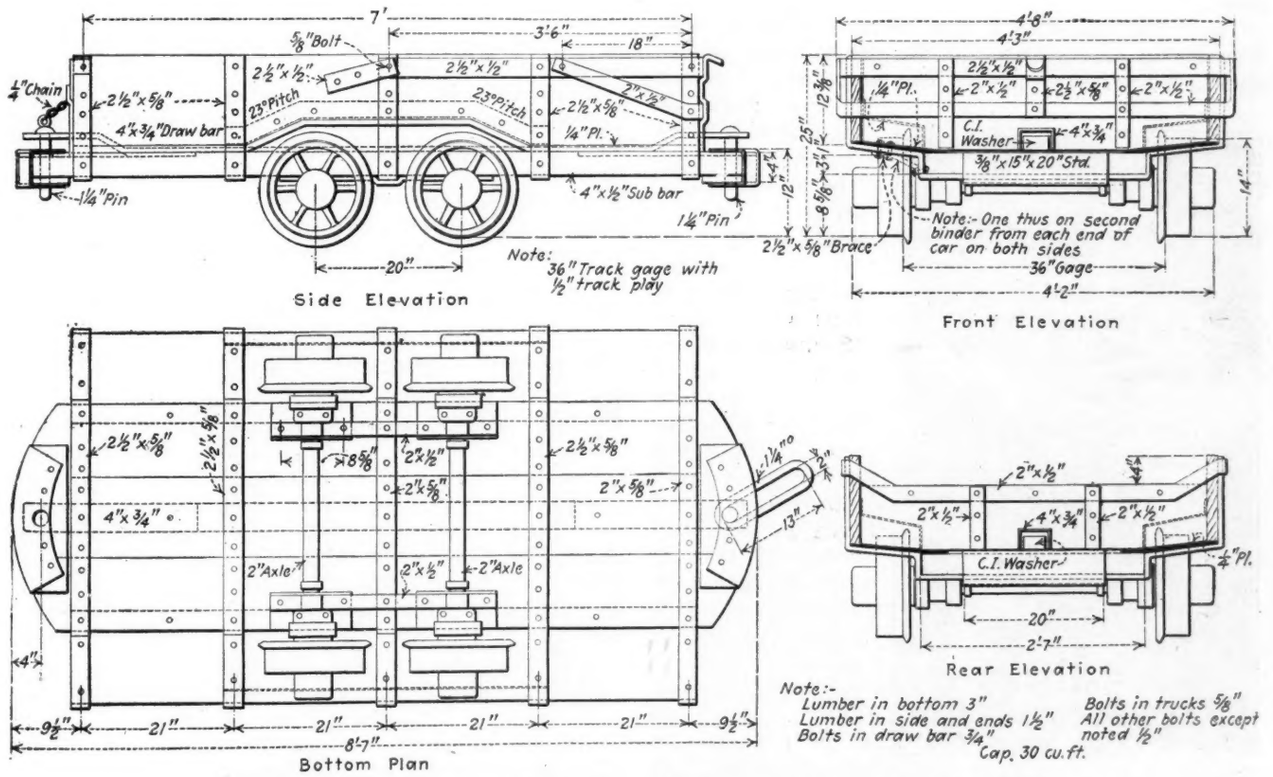
Notwithstanding the increased size and weight of the

*President, La Follette Coal & Iron Co.



FORMER CAR OF LA FOLLETTE COAL & IRON CO., FOR USE IN A 42-IN. BED

The car is only 28 in. high and it has the flare which for many years satisfied those who departed from the square box type of car which preceded it. The inside width on top is only about 3 ft. 5 in. and at the bottom only 2 ft. 3 in. These facts account for its meager capacity.



PRESENT CAR OF LA FOLLETTE COAL & IRON CO. WITH LARGE CAPACITY

In this car the wheels are placed so that their upper parts are above the general floor of the car, which is raised over the wheels so as to admit of this arrangement. As a result the width is about 4 ft. at the top and about the same at the bottom, greatly increasing the capacity. Instead of each wheel projecting separately into the car bottom, common housings are built over both the wheels on either side of the car.

new car the miners report that when loaded it can be pushed over wooden rails with greater ease than could the older one on steel rails. Of course any improvement that pleases the miner tends toward cost reduction. Furthermore a locomotive can haul as many of the new cars as it could of the old, about thirty constituting a trip. The only additional expense is the slightly increased actual power consumption. It is estimated that haulage costs have been reduced about 25 per cent by simply changing the design of car. The first cost of the new car is practically the same as that of the old design, so that no greater investment is required.

Coal from Behring and Chickaloon Fields, Alaska, Will Be Used on Battleship

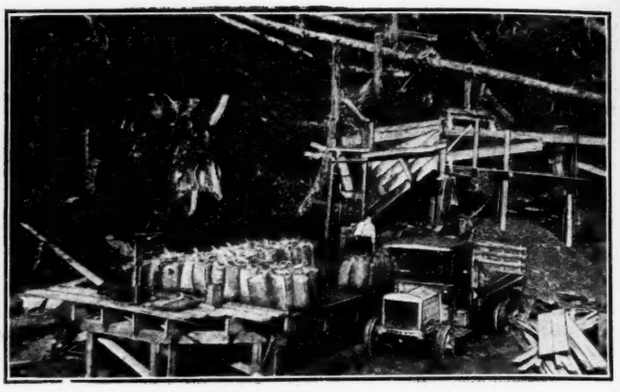
RECENTLY the naval collier Jason started en route from Alaska with 5,000 tons of washed coal from the Chickaloon mine and 600 tons from the mines of the Behring River Coal Co. This coal is to be given a test on a battleship. John Blizzard, one of the fuel engineers attached to the U. S. Bureau of Mines, will assist in the tabulation of the results.

An application of gold-mine practice has been resorted to in washing the Behring River coal. Gold sluices have been put in for this purpose and are giving splendid results. They are built in parallel, so that while one is being cleaned the other is in service. The plan is so effective that even the fine coal, which settles in the bins, shows no more than 4 per cent ash. Much of the coal thus far mined has run only 2 per cent in ash. The coal is sacked at the foot of the sluice and then transferred by truck to a canoe landing 4½ miles away.

The truck runs over a type of plank road that has been used so successfully that the plan is being adopted elsewhere in Alaska and may play no inconspicuous part in the expansion of motor haulage in the territory. The road is laid directly on the tundra. Heavy slabs are laid down for crossties. In lieu of rails a 3-in. plank 12 in. wide is spiked to the crossties on each side to form the track for the trucks. Guide rails have been found unnecessary and even in wet, slippery weather no difficulty has been experienced in keeping the trucks on this type of roadway. This particular road has been in service for three seasons and it has been found that the cost of maintenance is insignificant. The original cost was $6,000 per mile. A plank road in the Katalla oil fields nearby was built twenty years ago and still is in service.

BEHRING COAL IS WASHED LIKE GOLD

Two sluices with riffles were built to be used alternately. The fine washed coal contains only 4 per cent of ash and some of the coal runs only 2 per cent.



TRUCKING BEHRING COAL TO CANOE LANDING

Slabs are laid on the tundra and a runway is made of 3 x 12-in. planks laid on their flats and spiked to the slabs. On these planks, unprotected by a guard rail, the truck runs 4½ miles.

Some Hoisting!

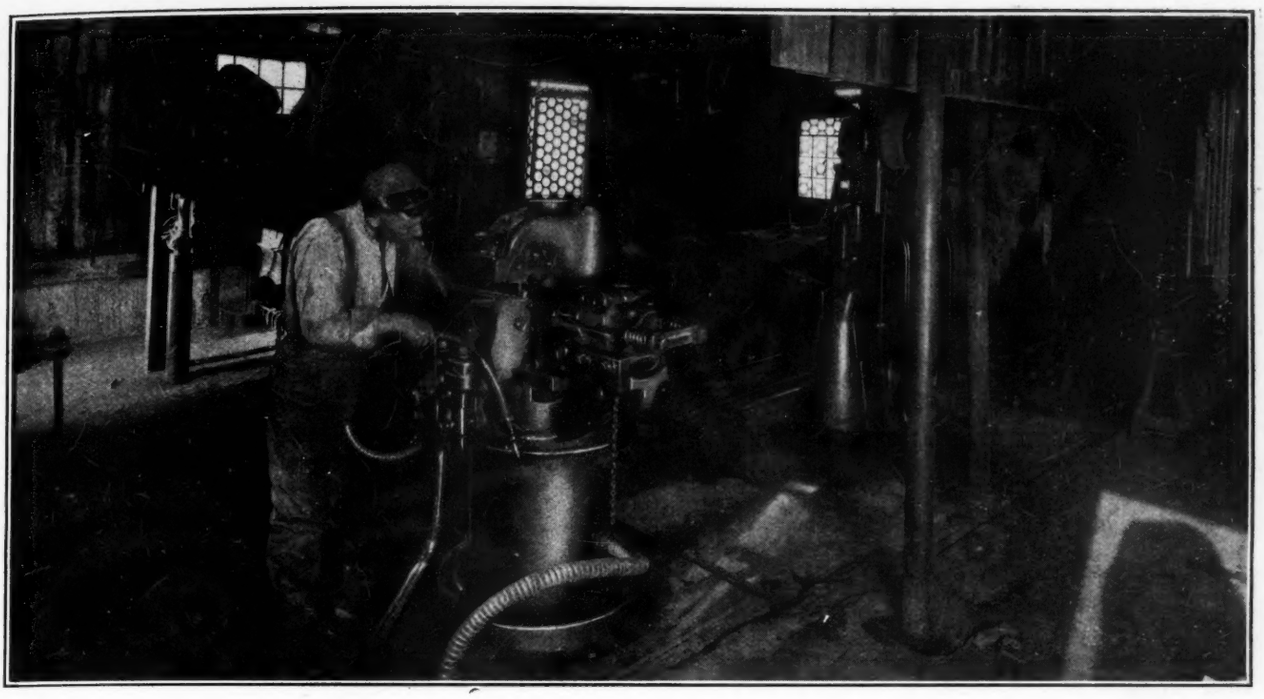
SEVERAL months ago *Coal Age* requested information concerning hoisting and production records. Many replies were received and published and much interest was manifested in the results. One great difficulty in considering such data is that it is seldom that the lengths of cage travel in any two cases are the same or even closely similar. This renders a basis of equitable comparison difficult.

Charles F. Sherman, general superintendent of the Groveland Coal Mining Co., Peoria, Ill., writes that on Oct. 16 at Groveland No. 2 mine 274 hoists were made in 60 minutes. The total length of hoist or cage travel at this operation is 202 ft. and the cars hold a net weight of 3,000 lb. of coal.

With cars holding only 1½ tons of coal each, Groveland No. 2 can hardly expect to compete in output with some other operations regardless of the excellence of its hoist or the skill of the engineers that drive it. So far as *Coal Age* is aware, however, the above figure stands as a record so far as actual number of hoists performed in one hour is concerned. If any mine can beat or has already bettered this number, we would be glad indeed to hear about it.

Inspector Exonerates Lake Creek Miners

IN A RECENT letter W. L. Morgan, State Mine Inspector of the twelfth inspection district of Illinois, writes saying that the unofficial report on the explosion at the Lake Creek mine of the Consolidated Coal Co., near Johnston City on Friday, Sept. 29, in which five were killed and two injured was wrongly ascribed to two miners who were alleged to have been smoking pipes. Mr. Morgan has reported to the Director of the Department of Mines and Minerals that the explosion was due to the surveyors igniting a body of gas in entries that had not been working for two or three years. These entries were in about 300 ft. from the main entries. Owing to a chain of circumstances the ventilation had been short-circuited in these headings. The explosion that ensued ignited a cartridge of powder and then a keg of powder, part full. The explosion occurred just as one miner was loading his car and the other sitting on a pile of coal. The miners were not in any way to blame.



The Mine Blacksmith's Tools and How He Uses Them

Mounting the Anvil—Three Cutting Tools—Flatters and Set Hammers—Fullers and Swages—Punches and Tongs—What They Are Made Of—How They Are Tempered and How Kept in Condition

BY GUSTAV A. RADEBAUGH*
Urbana, Ill.

EVERY official around the mines should know something about blacksmithing, for much of the successful operation of a mine depends on the prompt and efficient performance of this department.

In Fig. 1 is shown the various parts of the common anvil. The best anvils are made with a wrought-iron or soft-steel body and a face of tool steel about ¾ in.

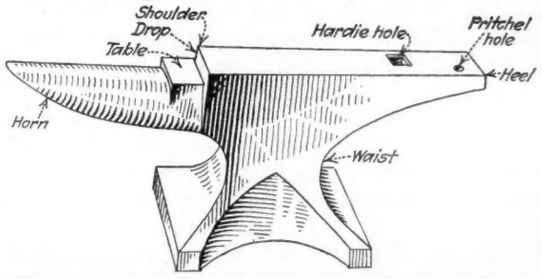


FIG. 1—PARTS COMPRISING A COMMON ANVIL
The pritchel, or prickle, hole is used when making holes in iron or steel. The stock is held on the flat of the anvil and the punch driven till it is about two-thirds through. Then the stock is reversed and held over the pritchel hole and the punch driven through from the face thus made uppermost.

thick. The horn and table are not so faced, however, and they are said consequently to be "dead." They do not wear nearly as well as they would if they were faced with tool steel. The size of the anvil is not rated by its dimensions, as being so many inches long or wide, but by its weight, and this weight is marked on the face of the anvil in three numbers. The first records the weight in even hundredweights, the second the excess in weight in quarter hundredweights over the nearest lower even figure and last the excessive weight in pounds over the nearest lower even figure for quarter hundredweights. The usual weight of an anvil for shop use is between 100 and 150 lb. The pritchel and hardie holes are used to hold tools in place and also serve for the making of bends.

The anvil is mounted on a solid wooden block, preferably of oak, hedge* or ash. It should be cut square

*Osage orange.

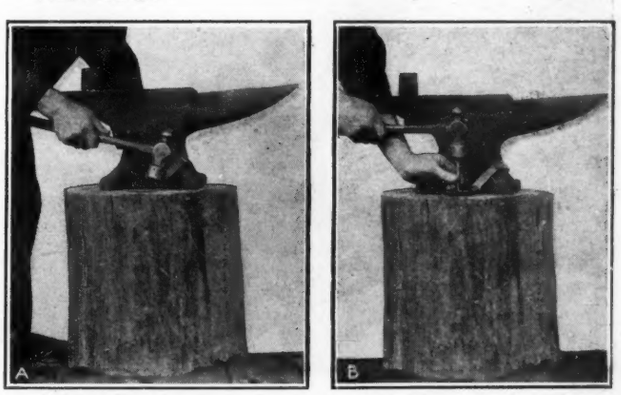


FIG. 2—ATTACHING THE ANVIL TO THE WOOD BLOCK
Primitive as is the wood block, nothing better has been found. The spring that the wood gives is a desirable quality, as it imparts a certain liveliness to the anvil.

*Mechanical engineering department, University of Illinois.

NOTE—The headpiece shows a blacksmith shop at the Delaware Colliery of the Hudson Coal Co.—a regular power hammer and a makeshift, two forges, a grindstone and a power hacksaw. Published by courtesy of Ingersoll-Rand Co.

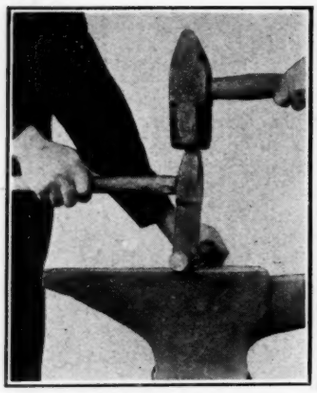


FIG. 3—HOT CHISEL

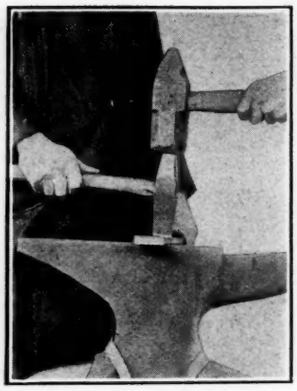


FIG. 4—COLD CHISEL

The hot chisel should not be used on cold work for it does not retain its temper and its edge will bend over. The cold chisel is shorter and thicker than the hot chisel on its cutting end. As a rule it is tempered harder also.

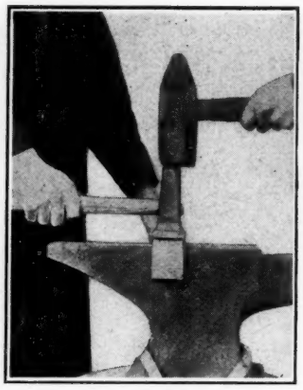


FIG. 6—FLATTER

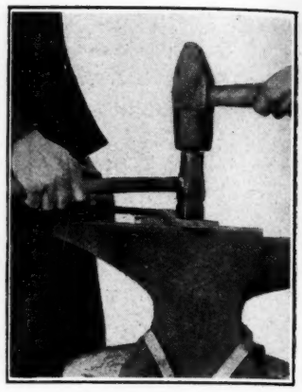


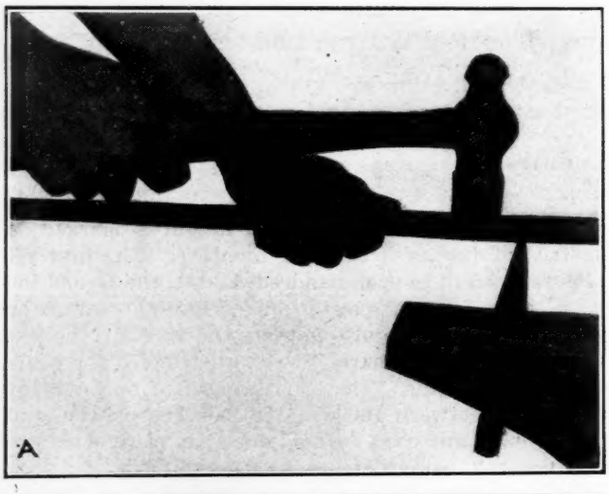
FIG. 7—SET HAMMER

The flatter and set hammer permit the making of bends without leaving hammer marks on the stock thus forged. The material should be worked at a dull red heat and the tool dipped in water before use.

on each end and should be about 20 in. long. The anvil should be at such a height that a man standing erect and doubling the knuckles of his hand could just touch the face. It should be set 5 ft. from the center of the forge and directly in front of the fire and the floor should be well leveled before the block is placed in position. A piece of ¼ x 1¼-in. soft steel is secured and bent around the waist of the anvil as shown in the illustration. After this steel has been shaped to the outline of the anvil a ¾-in. hole is drilled in each end to receive the holding-down spike.

The anvil should be placed in the center of the block, and the strap should be spiked to the block. Though one of the simplest methods for securing the anvil it is one of the best. A wooden block is the best mounting for an anvil, as it gives the necessary cushion for the solid mass of steel. It helps to liven up the tool and makes it much easier to work on. The anvil should be placed so that the horn is to the left of the operator.

Three cutting tools are commonly used about the forge and anvil. The "hot chisel" is used for cutting hot metal. As shown in the view, the tool is held by the smith and the helper strikes the tool with the sledge. When cutting hot metal the chisel should be dipped in water after receiving several blows from the sledge. This is done to prevent the cutting edge of the tool from becoming heated to such a degree that all the temper will be drawn from it and the chisel become so soft that the edge will bend over. Under ordinary treatment the hot chisel does not hold its temper and this is why it should never be used on cold work.



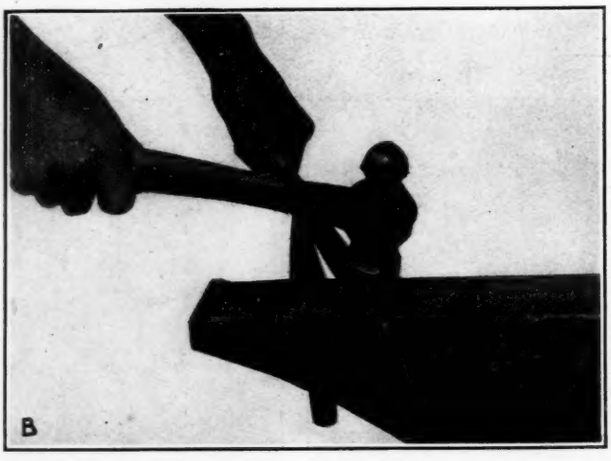


FIG. 5—HARDIE SET IN ANVIL CUTS LIGHT IRON

The blow of the hammer is made near, not over, the hardie. Note also that a hammer, not a sledge, is used. Cuts are made all around the stock, which is finally broken off in the manner shown in B.

For Heavy Cutting Dip Cold Chisel in Oil

The cold chisel shown in Fig. 4 is used in the same manner as the hot chisel, but the cutting edge is of a thicker cross-section. It is designed so that heavy blows from the sledge can be delivered without injury to the cutting edge. Compare the two chisels as shown in Figs. 4 and 5. It will be noted how much shorter and thicker the cold chisel is on the cutting end. In using this tool in cutting heavy sections the edge should be dipped in oil, which will assist in keeping the edges keen.

The hardie, Fig. 5 *A* and *B*, is set in the anvil by inserting its stem in the square hardie hole. It should fit the hole loosely enough so that it will not stick or wedge tight. It is used for light cutting and for trimming hot or cold work. The hardie for hot work is drawn out to a thin edge, but that which is used for cold work is much thicker. The edges are designed somewhat like those of hot and cold chisels, respectively.

In illustration *A* is shown how a piece of stock is placed on the hardie to be struck by the hammer. When cutting stock a deep cut should be made around the material. The stock is then placed on the edge of the anvil as shown in illustration *B*. A few blows with the hammer will then break the stock. It will be understood that the material in this operation is worked cold.

The hardie, it will be noted, is a one-man tool, but though it has this advantage over a hot or cold chisel it has the disadvantage that it cannot be used for large work. All three cutting tools are forged from 0.7 to 0.8 per cent carbon steel. The temper should be drawn to a light straw color. When the cutting edges become worn or blunted they can be ground or redressed and tempered. The spoke of an old buggy wheel makes excellent material for the handles of all forging tools that are to be made of wood.

In forging work many tools are needed if a job is to be properly finished. The flatter and set hammer (see Figs. 6 and 7) are used for practically the same purposes—smoothing and flattening work. By using these tools when the material to be forged is at a dull red heat and dipping the tool in water before it is applied to the work, all the rough scale can be removed from the surface, thus leaving a smooth, finished appearance. When making a stock-gate hinge a right-angled bend is made, as shown in Fig. 6. It is good practice in this instance to use the flatter instead of a hand hammer. A more even bend can be made and the surface of the stock will not be made uneven by hammer marks. Flatters for general work have a face from 2 to 3 in. square. The edges of the face are slightly rounded, and because of that provision the tool will leave no marks on the work.

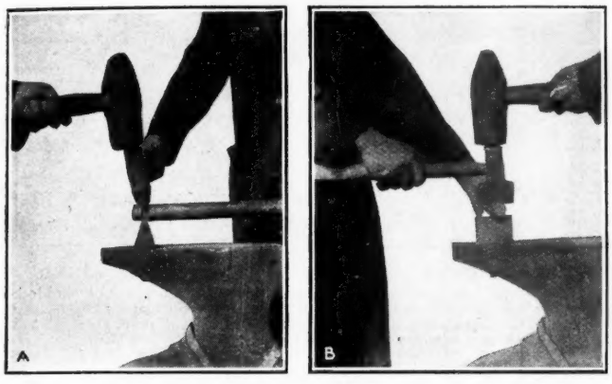


FIG. 8—TOOLS USED FOR MAKING ROUNDED GROOVES

A shows the top and bottom fuller, the latter fitting into the hardie hole. *B* shows another view of these tools. The top fuller is sometimes used alone for making scarfs for welds, for forming grooves, smoothing fillets and forming shoulders on only one side of the forging.

The set hammer is shown in Fig. 7 making an offset on a strap iron. When an offset of the thickness of the stock is desired a piece of the latter is placed on the anvil, and the strap iron is laid over this piece as shown. The work thus offset is then forged into shape by the aid of the set hammer and sledge. The set hammer is useful also when squaring up right-angled bends. These hammers are made with faces from 2 to 2½ in. square.

The top and bottom fullers and top and bottom swages (Figs. 8 and 9) are made in pairs. The bottom parts of these tools are designed to fit in the hardie hole and the tops are provided with handles. As shown in the view, the forging blow is delivered by a sledge, the tools being held in a stationary position. Fullers and swages are both sized by the curved edges. A fuller with a curved edge of ½-in. radius would be termed a 1-in. fuller, as the curved edge would be the same shape as one-half of a 1-in. bar.

The fuller is made in several sizes. The top and bottom fullers are used for forming depressions or shoulders on opposite sides of materials, as shown in Fig. 8. They will also be found useful when drawing out metal between shoulders or projections. The top fuller is sometimes used singly in making scarfs for welds, forming grooves, smoothing fillets or forming shoulders on only one side of the forging.

FIG. 9—SWAGE

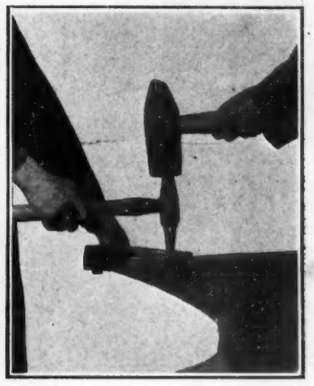


FIG. 10—PUNCH

The swage rounds up work or forges round shapes to a smaller size of correct semicircular cross-section. After a rod is welded the swages are used to smooth the weld. Punches are made of octagonal or round steel, tapered toward the working end but slightly flared or relieved at the point.

The swage (see Fig. 9) is used for rounding up work or forging round shapes to a smaller size. When forging stock to a circular section the swages are conveniently used for smoothing up after the stock has been drawn to about the correct size. After welding a rod the swages are used to smooth up the weld.

When Tool Mushrooms It Should Be Redressed

If an extra-smooth job is desired the top swage can be dipped in water occasionally. The operation is known as "swaging." These tools are not tempered and the best grades of them are made from drop forgings out of 0.8 to 0.9 per cent carbon steel. After these tools have been in severe service the head of the tool mushrooms, and chips of steel may fly when the tool receives a blow from the sledge. This can be avoided by redressing the head of the tool. To redress these tools, remove the handles and work the steel at a cherry-red heat. After the operation is complete, permit the head of the tool to cool slowly by placing it in ashes.

The small repair shop uses two methods of punching holes in hot metals—the hand punch and one of a heavier type, as shown in. Fig. 10. This latter punch is provided with a handle and driven by a sledge. The hand punch is made from octagonal or round tool steel and is about 8 in. long. The end is forged to a taper

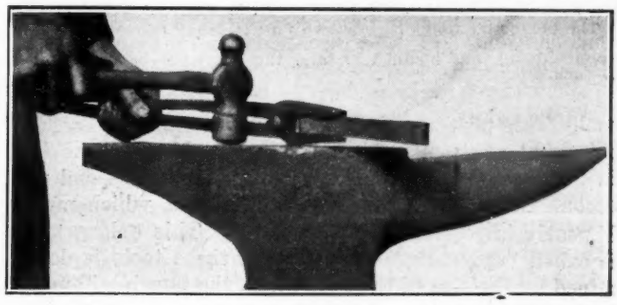


FIG. 11—HOLLOW-BIT TONGS ARE SHAPED TO STOCK

This tool is heated before use and not cooled. When bright red the jaws are closed upon the piece to be held and are forged so that they will hold it tight. In the illustration the blacksmith is not forging the stock but the tongs by which the material to be forged is being held.

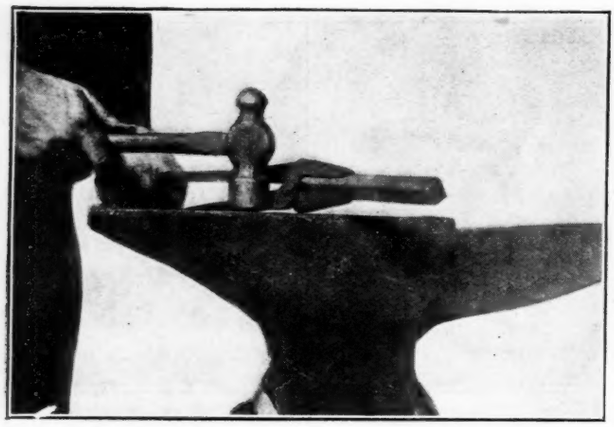


FIG. 12—HOLDING SQUARE STOCK IN TONGS

Stock should be held not at a few points but throughout the entire length of the jaws of the tongs. Note how carefully the forge man has shaped the jaws. A link slipped over the handles will keep a grip on the stock, and all the blacksmith will have to do will be to move the stock to suit his hammer.

and is made of the same shape but a little smaller than the hole to be punched.

When punching, as shown in Fig. 10, the hole is started by laying the work flat on the anvil and driving the punch about two-thirds through it. The work is then turned over and the punching is continued from the other side. The hole can be located easily by the bulge in the metal caused by the punching already accomplished. When the punch is driven through, the work is held directly over the round hole, as illustrated in Fig. 10. If the hole is punched in this manner it is left clean and to size.

When punching thick stock, after the punch is started the tool is removed and the hole filled with powdered

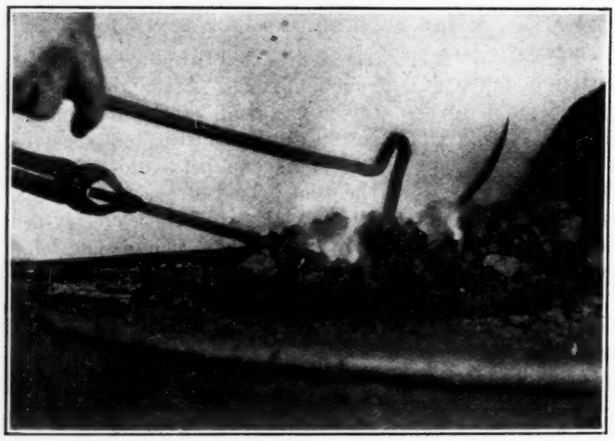


FIG. 13—PREPARING BOLT FOR WELDING TO NUT

The hollow-bit tongs here shown do not grasp the stock for the full length of the jaw. After the bolt is heated the end is rounded up, the blank nut is filled on and the nut and rod are welded to each other.

coal. This prevents the punch from wedging. Tools of this kind are tempered and they should never be left in the heated work any length of time, as the end will become soft and will enlarge in the hole, which makes it nearly impossible to withdraw it. This enlargement is called "upsetting." The size of these tools is determined by the size of the hole which the punch will make.

When an irregular shape, such as is shown in Fig. 11, is to be forged, it is necessary to take a pair of hollow-bit tongs and heat the jaws to a bright red. The jaws of the tongs are then forged to fit the piece of stock which is to be held. Sometimes the rivet in the tongs tightens up in this operation. This may be relieved by first cooling the tongs and then delivering several blows with the head of the hammer on the head of the rivet, which is held over the hardie hole on the anvil.

The best method of holding square stock is shown in Fig. 12. The tongs have been heated and hammered to fit the stock. In holding stock it is important that the tong jaw fit throughout its entire length. This type of tong is used to hold round stock as well as square. In holding the larger sizes of stock a link can be slipped over the handles. This will relieve the workman from the work of gripping the tongs tightly and allow him more freedom in handling the material.

When welding a head on the end of a rod to make a bolt, the stock is held in the hollow-bit tong, as in Fig. 13. The tong jaws should fit down on the stock snugly so as to insure easy handling of the piece while it is being forged. To make a special bolt, first cut the stock to length, then heat and round up the end of

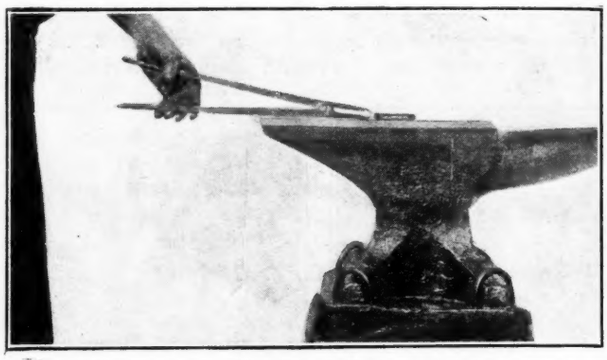


FIG. 14—SPECIAL TONGS MUST BE USED FOR LINKS

These tongs are carefully fitted to the link that is to be welded. They are not used to hold the link in the fire because they would get too hot. When the broken link is at the right heat it is seized by the tongs and rapidly hammered into a continuous ring.

the stock, fit on the blank nut and then weld the nut and rod together. After this operation is complete, cut the thread and the bolt is complete. Using the proper tongs for a welding job of this kind makes the operation much easier and insures a better weld.

The link tong, shown in Fig. 14, is an essential when welding chain links. It is made in such manner that its jaws can be heated and fitted to the link that is to be welded, for only a well fitting tong will hold the link securely. When heating the link to a welding heat, hold it in the fire with a small rod until that heat is reached. The link tongs should be used only to remove the piece from the fire when the weld is to be made and

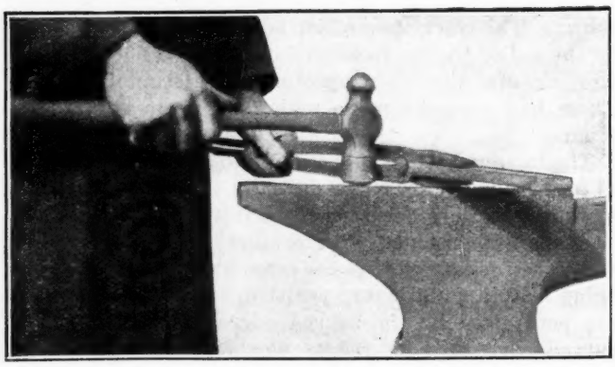


FIG. 15—FORGING THE HANDLES FOR READY HOLDING

Sometimes when the tong jaws are not properly offset the handles are so far apart near the ends that no human hand could grasp them. In that event the handles must be bent so as to correct that failing. The illustration shows this being done.

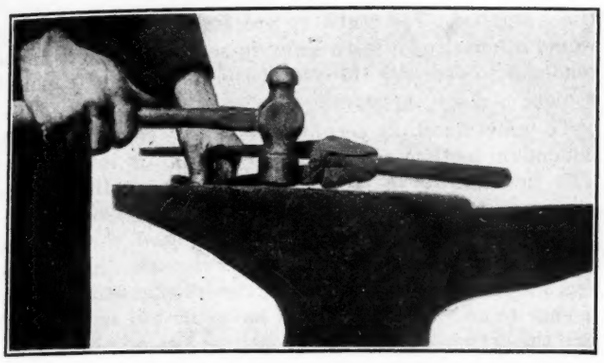


FIG. 16. BOX TONGS FOR FLAT OR ROUND MATERIAL
The tongs have a wide mouth which makes it possible for them to grasp a large piece of metal without causing the handles to diverge too widely.

during the making of the weld, for if they are used during the entire heating operation they will be heated to such a degree that they will not hold the link. This, however, applies only to smaller sizes of tongs.

In bending a short piece of steel to make a wagon-bed brace the stock is held while being heated and forged with the flat-jawed tongs (see Fig. 15). These tongs are made in various sizes to hold different thicknesses of stock. In using tongs the handles should be far enough apart only to permit the smith to grip the handles without unnecessary reach. When the tong jaws are not sufficiently offsetted and so are too close together for the stock to be securely held the handles are so far apart that it is impossible to hold them with one hand. This can be adjusted by placing the tong handles on the horn of the anvil as close to the rivet as is permissible and bending the handles to the center until the proper distance is obtained.

When forging a short piece of stock it should be securely held if the best results are to be obtained. The box tongs shown in Fig. 16 are found useful in many repair jobs, as they are designed to hold square or round stock so that it will not slip when being forged. It is important always that tongs should have and maintain a firm hold on the material forged.

Suggests Standard Shatter Test for Coke

COMPARISON between the strengths of cokes and the determination of the strength a coke must have to serve for certain purposes make it necessary to standardize the shatter test. To this the Committee D-5, on Coal and Coke, of the American Society for Testing Materials, of which W. A. Selvig, of the U. S. Bureau of Mines, is secretary, has addressed itself.

The committee suggests that the box for holding the coke in this test shall be 18 in. wide, 28 in. long, approximately 15 in. deep and shall hold about 50 lb. of coke. It shall be supported above a rigidly mounted cast-iron or steel plate not less than ½ in. in thickness, 38 in. wide and 48 in. long. The inside of the bottom of the box shall be 6 ft. above the plate.

The bottom of the box shall consist of two doors hinged lengthwise and latched so that they will swing open freely and not impede the fall of the coke. Boards about 8 in. in height should be placed around the plate so that no coke will be lost. To prevent breaking the material when filling the box, the latter shall be constructed so that it can be lowered to a convenient level, which is best done by means of a pulley and counterweight. For determining breakage of coke, square-mesh screens with the following openings shall be used: 2 in., 1½ in., 1 in. and ½ in. Circular screens 2 ft. in diameter are satisfactory for this purpose.

For byproduct coke when determining its freedom from breakage in handling, about 75 lb. of representative pieces of coke, none of which would pass in any position through a 2-in. square-mesh screen, is to be selected from the coke wharf for each test. This is best accomplished by dividing the coke on the wharf into approximately equal areas and selecting an equal number of pieces from each area. Each piece selected shall be approximately equal in length to one-half the width of the coke ovens and should show a "cauliflower" end produced at the walls of the ovens, and an "inner" end produced at the center of the ovens.

For beehive coke, when determining freedom from breakage in handling, about 75 lb. of representative pieces of coke shall be selected for each test as the coke is drawn from the ovens. This is best done by selecting full-length pieces, or their equivalent, as the coke is being drawn from previously determined points in the oven, so that they include pieces from the front, sides, center and back. If the individual pieces as taken from the ovens are too large and bulky, the 75-lb. sample shall be collected by removing three small pieces from each large piece—one from the top, the middle, and the bottom. The sample finally collected should be composed of an equal number of pieces showing top, middle and bottom. None of the pieces comprising the sample shall in any position pass through the 2-in. square-mesh screen.

For byproduct and beehive coke, when determining their fitness for furnace or cupola use, the sample is best collected as the coke is delivered from the railroad cars into the bins. This may be accomplished by inserting a scoop of 10 to 15-lb. capacity in the coke stream at regular intervals during the period of unloading. The sample collected shall be large enough to give about 75 lb. of coke pieces, none of which would pass in any position through a 2-in. square-mesh screen.

As it is difficult to collect a representative sample from coke exposed in bins and cars, care should be taken to take pieces representing the entire exposed area, if sampling must be done in this manner. This is best accomplished by dividing the exposed surface to be sampled into approximately equal areas and selecting an equal number of pieces from each area. Approximately 75 lb. of representative pieces, none of which would in any position pass through a 2-in. square-mesh screen, shall be collected.

About 50 lb. of the sample shall be placed in the shatter-test box, the coke leveled, the box raised, and the coke dropped four times on the plate, the small material produced being returned each time to the box with the large coke. After the fourth drop the material shall be successively run through the screens described.

In screening, care should be taken to prevent breakage of the coke pieces. The screen shall be shaken gently until all of the pieces are in direct contact with the meshes. The coke remaining on each screen, and that which passes through, shall be weighed separately. If the sum of these weights shows a loss of more than 1 per cent the test shall be rejected and another made.

As the average probable error of a single shatter test is approximately 2 per cent it is advisable to make several tests and report the average result.

Gear Economies Effected by Use of New Tooth Shapes*

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FOR many years stress was laid almost exclusively on improvements in the quality of the steel used in locomotive gears, but in recent years more emphasis has been laid on tooth shape and on the possibility of constructing better gearing through appropriate design. Any tooth of correct profile will give satisfactory service when new, but we must concern ourselves mostly with the service that the tooth will afford when, in course of time, it has become partly worn.

Until recently practically all locomotive gears had the Brown & Sharpe 14½-deg. standard tooth, which operated smoothly, was of a full depth and therefore had more wearing surface than the stub tooth. Being comparatively straight sided, it showed less tendency to push gear and pinion apart. This 14½-deg. tooth is a general standard, easily interchangeable and almost universally used for industrial machinery. The chief objection to it is the fact that when pinions thus formed have a small number of teeth the teeth are undercut in the flank, making them thin and likely to break near their roots. Furthermore this fault, objectionable as it is in new teeth, tends to accentuate as such pinions wear.

The first improvement used in the railway field was the 20-deg. stub, a tooth which is not so deep and which, therefore, gives the tooth on the opposing gear less leverage on the base of the tooth it drives or by which it is driven. It has accordingly less tendency to break, its sides, moreover, are more slanting and it is provided with a broader base. A 20-deg. stub tooth, therefore, has great strength and, because of its lesser depth, the pinion is strengthened somewhat against bursting, particularly where the bore is large and the pinion small.

The next development was the long- and short-addendum tooth, a type of gearing that for years has been used extensively for railroad service in European countries, particularly Germany and Switzerland, and has been adopted in America for many years in bevel and automotive gear. Its application to the electric-locomotive field was delayed primarily because it lacked interchangeability with teeth cut to the old standards.

This type of tooth usually is made with a 20-deg. angle, which broadens the base and increases the strength. Furthermore, by shifting the addendum, the pinion tooth, usually the weaker member of the train, is considerably strengthened, and this is done without weakening the gear. By making the diameter of the pinion oversize the quantity of metal between the root of the tooth and the bore is increased and thus it is strengthened at a point where it is often weak and likely to burst. This type of tooth when cut full depth is rather thin at the top, and as a remedy for this the tooth is sometimes stubbed. The stubbing process removes metal that would otherwise be worn away in service, hence it has a tendency to decrease the life of the pinion, but it makes a more pleasing appearance.

To understand the significance of the long- and short-addendum tooth, we will need to go slightly into theory. The involute curve is the base of practically all our modern gearing, as it represents the ideal curve of contact when two gears are in mesh. Fig. 1 shows three left-hand involutes generated from the same base. The section between the right- and the left-hand involute is a gear tooth, needing only to have the top trimmed off and the bottom shaped up to continue into adjacent teeth.

The farther apart the involutes, the coarser the pitch and the less teeth in a gear of any fixed diameter. The full involute, however, is too long for practical use, so a section is taken out of it for the individual gear tooth. If this section is close to the base circle, as at *A*, Fig. 6, we have practically the straight-sided tooth of very low pressure angle, which is used where there must be no thrust between gear and pinion. Coming up higher on the curve, as at *B*, we have the 14½-deg. pressure angle, heretofore standard. Higher up, as at *C*, we have the 20-deg. tooth, and to illustrate by an extreme case, as at *D*, we could build a gear with about a 30-deg. tooth and yet one which would work smoothly but with a heavy thrust and which would be of no value at all when considerably worn or used with bad bearings. High pressure angles therefore mean forming a tooth on the upper part of the involute curve, farther removed from the base circle. In a gear with many teeth slight changes in pressure angle are hardly measurable, but in a pinion with few teeth they are quite noticeable.

The dimension chosen as the standard depth of tooth is purely arbitrary. In Fig. 3 we have the full involute, which runs to a point at the top. We first decide the pressure angle we prefer to use, and this choice determines how high up we shall locate our pitch line on the involute curve. If we take a comparatively long section above and below this line, we have the full-depth standard tooth. If we take a lesser section above and below, we have the stub tooth. If we take a greater section above the pitch line than we take below the pitch line we have a long-addendum pinion, and when we build the

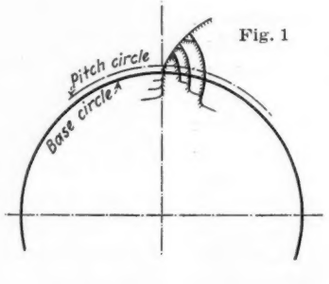


Fig. 1

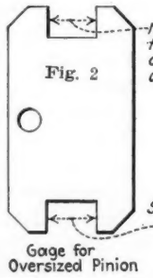


Fig. 2
Gage for Oversized Pinion

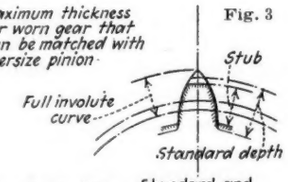


Fig. 3
Standard and Stub Tooth

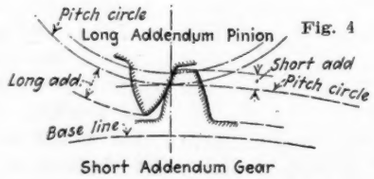
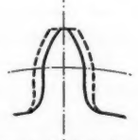


Fig. 4
Short Addendum Gear


Worn 20 Deg. Long Addendum Pinion in Spur or Helical


Worn 14½ Deg. Stand. Depth Involute
Fig. 5

LOCATION OF PITCH CIRCLE RELATIVE TO STRENGTH AND WEAR

Fig. 1—Development of heavy and low pitches on same base circle. Fig. 2—Gage for oversized pinion. Fig. 3—Stub and standard teeth. Fig. 4—Long- and short-addendum teeth. Fig. 5—Long-addendum tooth when worn is still strong at the base.

*Abstract of paper presented before Central Electric Railway Association.

†Assistant general manager, Tool Steel Gear & Pinion Co.

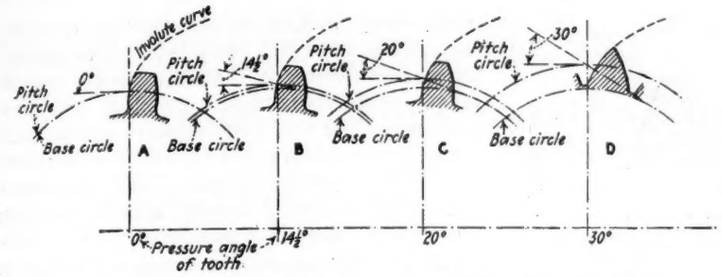


FIG. 6—FOUR TEETH WITH SAME PITCH AND VARIANT PRESSURE ANGLE

Shows plainly how the shape of the teeth will vary when the pressure angle is changed. An extreme case is shown in the right-hand tooth, where the pressure angle is 30 deg. The normal tooth is the second in the row. It has a pressure angle of 14½ deg.

gear to match it we must make it with a correspondingly short addendum.

In standard gearing the relative size of the tooth and slot is the same on each member. In long-addendum gearing (Fig. 4) the teeth are made much longer on the pinion and project further beyond the pitch diameter. On the gear the slot is deepened proportionately. Likewise on the gear which mates with this pinion the tooth projection is shortened and the slot in the pinion is correspondingly shallow.

The amount of diversion in extra length and depth is optional with the manufacturer, and he can build around any formula he desires. The longer the addendum on the pinion the more pointed it will be at the top of the tooth. In Fig. 4 the addendum of the pinion is made of extreme length so as to make the contrast between long addendum and standard gearing the more noticeable. The long-addendum pinion is preferable to the standard for the reason that it is a stronger pinion at the base and a thicker or "fatter" pinion at the pitch line. In actual service twice as much steel may be worn off the side of the tooth with safety before rejection with the long addendum than is permissible with the standard 14½-deg. shape. This is illustrated in Fig. 5. When worn out it is still a strong tooth at the base, whereas with the old shape the root tends to weaken more rapidly as the result of wear.

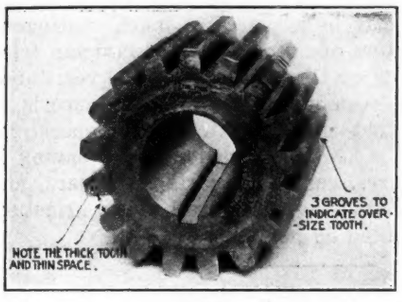


FIG. 7—OVERSIZE PINION

Will mate only with a worn gear. Space is made thin and tooth thick.

This means that if a long-addendum pinion and a standard pinion of equal quality are operating under identical service, the long-addendum pinion, because of its tooth shape, will have approximately twice as much life. The gears running with these pinions will have about equal durability; in fact, only by accurate measurement can you distinguish between the forms of the short-addendum and the standard gear tooth. There is no question whatever as to the desirability of the long-addendum pinion for any service where gears and pinions are to be completely worn out before they are discarded. The only drawback is the seriousness of changing over from the old standard to the new.

The "wisdom-tooth" pinion was recently brought out to overcome this difficulty and to present the operating man with a practical opportunity to realize all the advantages of long- and short-addendum gearing without making any radical change or expending much money. The wisdom-tooth pinion (Fig. 8) is in every way a long-addendum pinion and partakes of all its advantages. It is, however, so designed and generated that it can be operated with the standard Brown & Sharpe 14½-deg. gear.

Hence it can be installed without any gear change, and the operator can go over to the true form of long- and short-addendum gearing with all its advantages by merely renewing pinions with those of the wisdom-tooth shape. There is no dark secret about this profile; it is purely an involute generation of a standard tooth on an oversized-diameter blank. Its use, however, involves one slight change—that is, a slight reduction in the ratio as one tooth is dropped out of the pinion when the wisdom tooth is adopted. The changes in speed and acceleration caused by the different ratio are so little noticed that, for instance, street cars in railroad work equipped with "wisdom teeth" are running on the same schedule as cars with standard pinions and even in one case are running in multiple-unit trains interchangeably. In another instance wisdom-tooth pinions have been put on motors on one end of the car and standard pinions on the other with reports from the mechanical department that this gives thoroughly satisfactory service.

Wisdom-Tooth Pinions Stop Breakage Trouble

To illustrate the close similarity between the wisdom-tooth and the standard long-addendum tooth Fig. 8 (a) shows the one superimposed on the other. The oldest wisdom-tooth pinions have been in service more years than comprise the average life of standard pinions and still are only one-third worn out. In several cases they have completely stopped what was otherwise serious breakage trouble.

A still further and successful innovation is the "oversize" pinion of either standard, wisdom-tooth or long-addendum design. Whether this shall be used is also purely a practical problem. When an automobile cylinder and piston rings become slightly worn they are replaced with new oversize piston rings. Likewise, when a gear is badly worn it can be mated with a pinion having thicker teeth than the normal standard. This takes out the major part of the backlash and uses the old gear under much better operating conditions than normal.

At the same time, as the oversize pinion has thicker teeth at the start, more material can be worn off them before they are reduced to the scrapping point. The

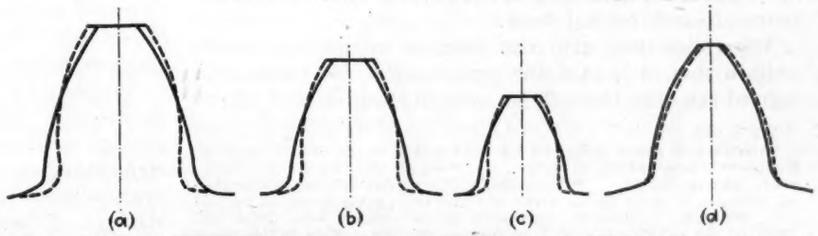


FIG. 8—WISDOM TEETH (HEAVY LINE) SUPERIMPOSED ON STANDARD TEETH

All wisdom-teeth pinions have one less tooth than the standard pinion for the same pitch, but the change makes little difference in operation.

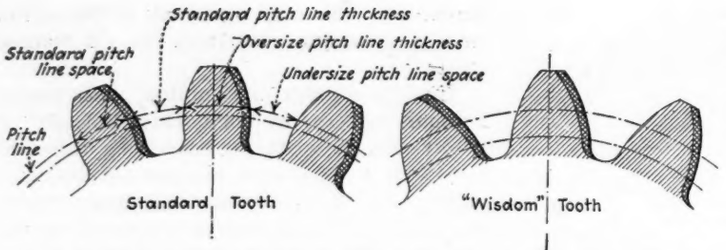


FIG. 9—THESE OVERSIZED PINIONS HAVE A TOOTH WIDTH AT PITCH LINE LARGER THAN THE SPACE

When a gear is badly worn it can be mated with a pinion having thicker teeth than is normal. By so doing most of the backlash is avoided and the service of the old gears is improved.

teeth, being thicker, are stronger at the root, both when new and worn out. The advantages therefore are that the pinion wears longer and has greater strength and less backlash. The only disadvantage is that care must be exercised not to mesh oversize pinions with unworn gears. The manufacturer guards against this mistake by marking them with three peripheral grooves, illustrated in Fig. 7, and by using a wear gage to ascertain whether the gear tooth is worn sufficiently to work satisfactorily with the oversize pinion.

An Argument in Favor of the Steel Grid*

BY A. F. PHELPS†
Parkersburg, W. Va.

OPERATING conditions in the coal-mining industry are perhaps more trying to resistance boxes than those found in any other work in which they are employed. To meet these difficulties experiments into the possibility of using rolled-steel resistances instead of cast grids were started some ten years ago and have continued down to the present date. Tests have been made as to the best alloy to be used for that purpose, the best method of supporting the grids, the best kind of insulating tubes, the preferable method of ventilation and other problems relating to the construction of such grids.

Cast-iron grids, being made of small cross-section, are liable to break when subjected to rough use, and sudden changes of temperature also are likely to fracture them. It has been said that more failures arise from the latter than from any other cause. It is easy to see that this latter defect cannot exist in a rolled-steel grid of any reasonable construction and even when broken by violence a steel grid can readily be repaired at the mine. A large company in West Virginia which had one hundred locomotives spent more than $20,000 in one year repairing cast grids whereas the rolled-steel resistors, of which it had several, needed no repair in the same period. Originally designed solely for mine locomotives, they are now used for street cars, hoists, cranes, large alternating-current motors, railroad turntables, steel-mill motors, coal-cutting and coal-loading machines and as ballast resistance for storage-battery locomotives—in short for all machines subject to severe operating conditions.

HARD STEEL ONLY IS USED

Rolled-steel grids are made of Homanite steel and have a resistance of 400 ohms per mil-foot. This steel has a high-silicon and a high-carbon percentage and is so hard that holes are punched in it only with difficulty, the method of punching having been developed after years of experimental work.

The rolled-steel grid has been so completely standardized that, it is said, the repair parts that have to be carried are only 15 to 20 per cent of those needed where cast grids are employed. What is equally important, the 6½x6½-in. grid is adapted for use with all locomotives. The grid has no loose ends or loops and has seven supporting rods which not only hold the grid but prevent its buckling. Mica tubes are used for insulating the grids. Each rod is insulated from the end frame.

In considering the use of grids of more expensive construction it must be remembered that a grid is a part and only a part of a large and expensive machine and that it is not a wise economy to use a grid that may cause a machine to be laid off. Furthermore, as the grid is but a part of the machine so a locomotive is a part of the equipment of a mine, and the laying off of the locomotive may be a source of much contingent expense and reduction of output. The electrician tries to avoid this loss by cutting out part of the resistance or by working the locomotive after the resistance is in part cut out, but that is not a safe way of operating. When the resistor is kept in condition a real saving is effected on armatures, controller parts and gears, and one company has found that with steel grids, armature burnouts were reduced 50 per cent.

*Abstract of paper prepared for submission to the West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers answering the contentions in the report of the committee on "the use in mine locomotives of resistance grids made of rolled-steel plate as compared with cast grids" which was presented Sept. 21 at its meeting in Huntington, W. Va. This article was published in the issue of *Coal Age* of Sept. 14, pp. 408 et seq.

†Post-Glover Electric Co.

That Elusive Proximate Analysis of Coal

EVERYBODY knows that the constituents of coal are ill-named in the proximate analysis. What is termed fixed carbon, says the American Society for Testing Materials in its book of Tentative Standards, 1922, "is made up principally of carbon but contains also appreciable quantities of sulphur, hydrogen, nitrogen and oxygen." Some of these elements do not appear in the volatile matter or in the moisture yet are lost to the ash and so are grouped with the fixed carbon.

Volatile matter does not include moisture and whatever else may pass off below 105 deg. C. but does include incombustible matter given off in further stages of heating. Much of this is moisture. Ash consists in part of oxygen not contained in the coal and does not contain some of the constituents of the true ash of coal such as the water of constitution in clay. As the same authority declares, "The ash as determined" in the standard methods "is less in quantity than that of the actual constituents of dry coal owing to chemical changes which occur in these by burning."

"Sulphur in coal," quoting again the authority just mentioned, "although commonly reported with the proximate analysis, is not correctly a part of it, being elementary and of definite composition. Sulphur, moreover, is distributed in the proximate analysis as a constituent of two or more of the ingredients thus determined." It is not impossible that in some cases it is found in all four.

Some of the Surprises Which American Mining Congress Exposition Held for the Operating Coal Man

Hudson Company Shows Loree Breaker Model—Bearing Ball in Perfect Balance—Rough Way of Handling Shovels—Weighing Coal on a Running Belt—Box-Car Loaders, Fans, Pumps, Cages, Gears and Drills

COAL mining was the major theme, running through not only the program but also the machinery exposition, at the twenty-fifth annual convention of the American Mining Congress which was held in the new Public Auditorium at Cleveland, Ohio, Oct. 9 to 14. This was so marked that one or two exhibitors who were not making any effort to reach the interest of coal-mining men were moved to say that the exposition was a wonder—for coal. Locomotives, drills, shovelers and loaders, cars, pumps, ventilating systems—practically the full equipment of a coal mine was on display in about 150 booths both on the main arena floor and in the broad basement of the magnificent building. Never had the annual mine equipment exposition held forth in such handsome surroundings. The attendance was reasonably heavy but gave the impression of being less because of the vastness of the building.

The usual number of striking features drew the popular as well as the technical eye—and ear. The Hudson Coal Co.'s model of the Loree anthracite breaker occupied its usual spotlight location, attracting much attention as it went through the operations of handling hard coal. A cross-section of the mine itself, illuminated within, showed interesting points at each mine level, giving the uninitiated a good idea of the way a hard-coal mine would look if the earth were sheared down to the mine and one side of the section removed. This display weighs 12,000 lb., fills an express car and is attended by a crew of five men.

Smaller by 11,999 lb. 15 oz., but almost as memorable, was a single Atlas ball from an SKF ball bearing. Shot upward through a tube by air pressure the glistening little steel globule descended upon a 10-in. steel plate and bounced there for two minutes—always striking the same spot, thus illustrating its perfection of form—until inertia settled it upon the plate, when a gentle air blast rolled it into a trough which directed it into the air gun for another flight. This unique exhibit was much discussed.

Proving Resilience of Molybdenum Steel

Noise makers in the exhibition were the General Electric hard-rock drill working industriously on two 1,000-lb. blocks of stone and a glass-sided shovel-testing machine shown by the Wood Shovel & Tool Co. Shovels clamped to stout spokes on a rimless wheel revolving inside a drum incessantly dug their way through a pile of cobbles, putting over the idea that Wood molybdenum steel shovels stand a tremendous amount of racket, wear down uniformly and do not crack under frequent reverse bendings. The rattling roar of Westinghouse and General Electric gathering motors with their wheels mounted on rollers, the occasional shriek of Federal electric sirens for mine signaling and the lesser clank and whirr from lighter exhibits lent a busy sound to the exhibit from first to last.

One of the outstanding exhibits was that of a Merrick conveyor weightometer in action. One of the machines of standard size for the continuous automatic weighing of conveyor-handled materials was exhibited and was inspected by a steady stream of men who ascended a flight of steps to a small platform beside the "integrator box" containing the sensitive mechanism which was recording the weight of gravel passing on a belt. The weightometer can be installed on any belt conveyor, thus eliminating weighmen. A section of the belt is supported on a floating platform hung on compound levers, balanced by an iron float in a cylinder of mercury. The movement of the float is a direct measure of the weight on the conveyor belt. The float tips a roller-edged disk whenever a load goes over the belt. This disk is a part of the integrator, which multiplies the weight by the speed. A belt driven by the conveyor rubs against the rollers at the periphery of the disk. When this disk is perpendicular to the plane of the belt (the no-load position) the rollers revolve and exert no turning effort on the disk. When the disk, which is carried in a swinging frame, is tipped a component of motion of the belt acts to turn the disk. The greater the weight on the conveyor, the greater the tip and the faster the disk revolves. A simple mechanism records this motion after the manner of a gas meter. The weightometer is made by the Merrick Scale Manufacturing Co., of Passaic, N. J.

Rubber Insulation for Mine Power Cables

"Made like a cord tire," is the phrase that stuck in visitors' minds after they had seen the cable exhibit of the Rome Wire Co. Rubber insulated cables of nearly all sizes both in that booth and the display space of the Simplex Wire & Cable Co. were of interest because they had not been seen previous to a year ago. Heavy rubber insulation applied under pressure was put to all sorts of abrasion and kinking tests to show that cords and cables thus protected are built for heaviest coal-mine service whether used on a drill, a cutting or loading machine or a cable-reel locomotive. The cost may be twice that of ordinary braided cable but the service—many a mining man went away from the show with a new idea of the toughness and serviceability of good rubber insulation.

A lesson in quick loading of box cars with a minimum of coal breakage was taught at the Ottumwa Box Car Loader Co.'s display, where a model of an electric-driven pusher type loader was shown in action, illustrating the ease with which coal can be delivered clear into the ends of box cars without benefit of shovel and without the machine delay incident to the entry of a scoop gang into the car.

Modern ideas as to ventilation were set forth by the American Blower Co. and the Buckeye Blower Co. by an exhibit of reversible mine fans, capable of either blowing or exhausting, and booster fans to be used deep in the workings of a mine and especially with flexible

tubing such as that shown by E. I. du Pont de Nemours & Co. and the Bemis Bag Co. With such tubing blind entries and working faces can be thoroughly and quickly ventilated where otherwise much time would be lost waiting for smoke and gases to clear.

Though pumps were shown by several companies, it remained for the Deming Co., showing a triplex horizontal 4 x 5-in. pump taking only 30 in. of headroom, to remember the pump maintenance man by featuring a valve cap hinged at one side and clamped down on the other by an eyebolt attached to the valve shell. Thus the cap can be lifted for pump cleaning and inspection without dropping a nut or washer into the muck.

A new type of all-steel self-dumping cage, which cannot dump in the shaft, was shown by Robert Holmes & Brothers, Inc. It is a type now being built for its first installation early next spring. The cage is heavier than most others on the market and is built to withstand severest service. The bed of the cage is supported on 12-in. structural steel beams, the rocking arrangement being made of heavy cast steel. With a 7-ft. platform such a cage will weigh 8,000 lb. Larger sizes will be made upon specification.

Novel equipment for handling coal in and out of storage with greater speed and less installation and operation expense than that incurred in the use of the average bridge crane attracted considerable attention in the exhibit of the Railway & Industrial Engineering Co., which now makes the Harrington Rocking Cableway. The construction is similar to that of any other standard cableway except in one important feature—its head and tail masts can be rocked in unison through an arc of 120 deg. Thus if the carriage is operating a clamshell bucket it can pick up or deliver coal over a wide area instead of merely along a single line, which is all that can be done when the masts are vertical and the cable line stationary. With 100-ft. masts the field of operation may be 180 ft. wide. The power consumed in rocking under load is greatly reduced by counterbalance weights.

Worm-Gear Speed Reducers Safe and Economic

An adventure in gears into the coal-mining field got its start at the exposition in the Dravo-Doyle Co.'s exhibit of Cleveland worm-gear reduction units. These worm-gear drives, designed for other uses, are now being applied in power transmission on picking tables, conveyors or any other comparatively slow, steady-moving machinery. Operating in an oil bath exactly on the principle of a worm gear in the rear transmission of a motor truck these units are expected to gain a foothold in mining because they occupy only about one-tenth the space of spur gears or belting and, being enclosed in a cast-iron case, they are protected against dirt and grit and do not tempt workmen to leave off the safety guards which are supposed to be bolted over trains of gears but which so seldom stay there.

A time and labor saver for roof drilling was a stoping drill shown by the Cleveland Rock Drill Co. This one-man puncher had a bit that rotated at regulated speeds by an air turbine. The machine is operated without needing the usual aid of a pair of strong-backs held in place at the two ends of a plank. Instead it is lifted up and down on a telescopic cylinder that is operated by air admitted through a valve at the bottom. Thus the drill works on an air cushion. This adds at least 24 in. to its range.

Newest among safety devices displayed was the little "self-rescue" gas mask forming part of the exhibit of the Mine Safety Appliances Co. This little mask, which really is not a mask at all but merely a small canister with a tube for the user's mouth and a wire clip to hold his nostrils shut, is designed to give every miner 30 minutes' chance to escape in case he is caught by deadly gases while still able to travel. If the device were adopted as standard equipment at a mine, each man going below would have one hanging at his hip. In case of need he would snatch it from his belt, put the tube at the end of the canister in his mouth, clip his nose shut and be assured of safety from carbon monoxide for a given length of time in case the percentage of the gas was not too high.

In atmospheres contaminated by mine fires it is sure to be effective, for the very presence of fire is assurance that the air contains sufficient oxygen to sustain life. The canister is perforated at the outer end. Air inhaled passes through the usual granular charcoal and soda-lime absorbent and then through a layer of "hopcalite," or mixture of the oxides of manganese, copper, silver and cobalt, which changes the carbon monoxide to the relatively harmless carbon dioxide.

The same exhibit showed various other devices, including Burrell gas masks and also oxygen breathing apparatus. The latter device, despite the introduction of gas masks, has yet to find a real competitor except where there is certainty that the oxygen percentage will not be found at any point dangerously low.

Fusibility of Coal Ash

DATA regarding the softening temperature of coal ash from several hundred coals from the different fields of the country are contained in Bulletin 209, "Fusibility of Ash from Coals of the United States," by W. A. Selvig, assistant analytical chemist, and A. C. Fieldner, supervising chemist, U. S. Bureau of Mines, just issued by the bureau.

Information concerning the fusibility of coal ash has become of appreciable value to the consumer of coal, mainly in connection with the troublesome formation of clinkers resulting from the melting of the ash constituents of the burning coal. The growing interest in such data has led the Bureau of Mines to make a general survey of the "fusing" or "softening" temperature of the ash from coals of the United States. It is hoped that this information, when used together with the large number of coal analyses published by the bureau, will assist the consumer of coal in comparing different fuels and in selecting that best adapted for his purpose.

Coal ash is the incombustible residue remaining after the complete combustion of coal; it is derived from the inorganic mineral constituents of the coal. The ash-forming constituents are: (1) Inherent or intrinsic impurities that are present in an intimate mixture with the coal substance, and are derived either from the original material or from external sources such as sedimentation and precipitation while the coal-forming plant remains accumulated; (2) impurities, formed either during the laying down of the coal bed or subsequently, that occur in the form of partings, veins and nodules of clay, shale, slate, pyrite and calcite; and (3) impurities that become intimately mixed with the coal in the process of mining, such as fragments of roof and floor. Coal ash is composed largely of compounds of silica, alumina, lime and iron, with smaller quantities of magnesia, titanium and alkali compounds.

Utah's Only Coal-Retarding Conveyor Lowers Output Of Spring Canyon Mine, Two Hundred Feet

By Charles M. Schloss
Denver, Colo.

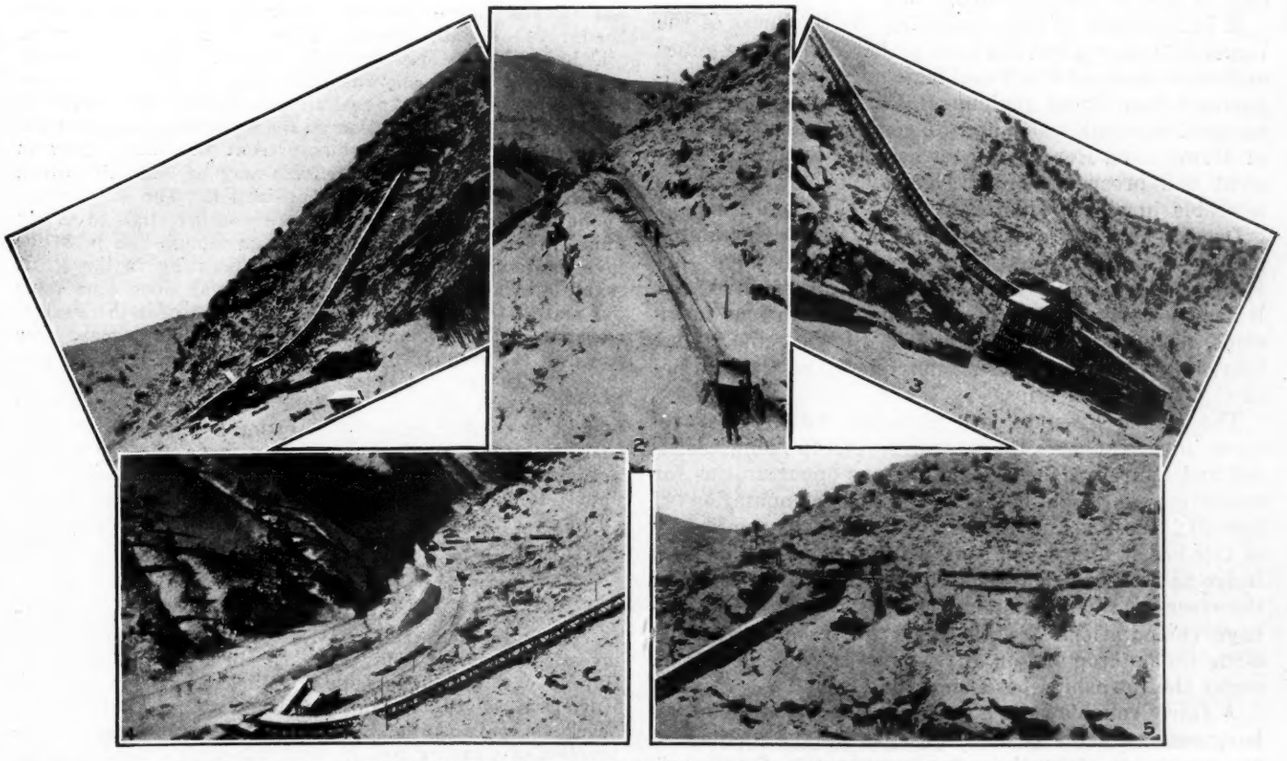
THE retarding conveyor as a means of lowering coal from mine openings on the mountain sides to tipples in the valleys, though common in West Virginia and Kentucky, is unusual in the Rocky Mountain region, despite the fact that many mines are so situated that this would be the simplest solution of the lowering problem.

Utah boasts only one retarding conveyor. In the Spring Canyon field the coal beds outcrop a considerable distance above the railroad tracks. The Carbon Fuel Co. has spanned this distance by a two-strand conveyor 375 ft. in horizontal and 200 ft. in vertical projection. The inclination of the major part is at over 34 deg. with the horizontal. Coal is dumped on the shelf or coal bench by a single-car rotary dump into a hopper, from which it is fed by a reciprocating plate feeder to the retarding conveyor. The conveyor discharges onto the shaker screen.

The construction cost of a conveyor system is about the same as that of a gravity plane, but the conveyor has the better of the argument from that point on. First, the severe service to which mine cars are subjected on the steeply pitching planes may roll up during the year a maintenance charge of nearly $50. Second, the track on an incline can be maintained only with difficulty and at much expense. Third, more cars are required when they are obliged not only to haul coal to the head house but to make the trip down the incline and back again. Lastly, with the plane it is necessary to have a terminal on the shelf and one at the bottom, and this demands a crew at each terminal. With the conveyor and dumping cars on top, the dumping crew only is necessary. This in itself is no inconsiderable saving.

It is interesting to hear the opinion of an engineer prominently identified with the design of plants for the handling and preparation of coal:

"Take the history of the coal industry in West Virginia, where almost every known device has been used to take coal down the sides of the mountains—inclined plane, monitor dumping the coal at the top and lowering it to the bottom and rope retarder. In every modern instance you will find that the two-strand conveyor is being used exclusively; as a rule installations with small tonnages are using other devices, and it will be only a question of time until they change. This has been the history of the industry in the Kentucky district. I have never known a retarding conveyor which had been built right to cause any serious delay, but every so often you hear of a trip getting away on an inclined plane. I was told that one wreck in Utah cost $12,000 besides all the incident delay; mine cars were threaded onto railroad irons like buttons on a string, and they were steel cars at that!"



SCENES AT PLANT OF CARBON FUEL CO., RAINS, UTAH, LOCATED IN SPRING CANYON

(1) Tipple and 436-ft. retarding conveyor; capacity, 200 tons per hour. (2) Dump track with derailed car. When a car will leave the track on a level, as here shown, it can hardly be expected to stay on when on an incline. (3) Another view of tipple and conveyor. (4) View up Spring Canyon on a winter afternoon. (5) Head of conveyor. Cars are discharged by a one-car rotary dump into hopper shown and are fed by reciprocating feeder into top of conveyor.

Reports and Investigations State Geological Surveys and Mining Bureaus

Coal Reserves in Fayette County, Pa., Contained in Seven Beds

By John F. Reese

FAYETTE COUNTY, Pennsylvania, has seven coal beds that may be considered of economic value at the present time. In order of importance, so far as production is concerned, these are the Pittsburgh, Sewickley, Upper Kittanning, Lower Kittanning, Upper Freeport, Waynesburg and Redstone.

Extensive development of the Pittsburgh bed and its outcrop throughout the county have furnished many measurements of its thickness, making possible an accurate and reliable computation of the quantity available. For some localities no information is at hand as to the size of mined-out areas, and an estimate of probable depletion has been based upon the age of development and the size of surrounding operations in these particular sections or on the difference between original areas and statements of areas unmined.

The outcrop and development of the Sewickley coal bed have given many reliable measurements of its thickness. This bed is considered of value as a shipping coal in eight townships. Many mines have been opened in this bed in recent years, and its economic value as a producer of fuel for industrial purposes is second only to that of the Pittsburgh coal.

A fair amount of data regarding the thickness of the Upper Kittanning bed has been gathered from the mines and outcrop along the Youghiogheny River in the Confluence-Indian Creek region. It has been considered as being of economic value and its contents calculated only in Stewart and Henry Clay townships. Future development and prospecting, however, may show that it is mineable in other localities west of Chestnut Ridge.

Development and prospecting of the Lower Kittanning coal in the Confluence-Indian Creek region have furnished a fair number of measurements of its thickness. It has been computed as of economic value in four townships, namely, Saltlick, Springfield, Stewart and Henry Clay, but future prospecting may show that it is mineable in other townships.

The Upper Freeport bed contains the greatest reserve in the county. Its extensive outcrop along Chestnut and Laurel ridges gives numerous opportunities for measurements, making fairly reliable computation of quantity possible. It is assumed that the continuity of this bed is unbroken from the west slope of Chestnut Ridge to the Monongahela River. Core drillholes along the river prove its existence in that region. The tonnage computations are based on many measurements along the outcrop and on an assumed thickness of 42 in. under the townships bordering the river.

A fairly reliable estimate of the quantity of Waynesburg coal available is made possible by the number of measurements along the extensive outcrop of this bed. Because of its accessibility the Waynesburg coal is mined at many places throughout the county for local use. This bed is badly broken by partings, but where the thickness is fairly uniform, there are several mines that are shipping this coal for industrial purposes. Because of the character of the bed, however, it will not become a great producer of shipping coal and will be of less economic value than any of the beds whose quantity has been computed.

Outcrop and shaft sections of the Redstone bed give a fair idea of the extent and thickness of this coal. It is not mined for shipment but is used for domestic purposes in several localities.

Other coal beds than these are mined for local use, but as they are not important and little is known of their extent and thickness, they have not been included in the computation of the reserves.

The result of computing the coal reserves in Fayette County based on the latest maps, engineering data, and methods is shown in the accompanying table.

COAL RESERVES IN FAYETTE COUNTY *

(In Net Tons)

Bed	Original Deposit	Mined Out	Recoverable
Pittsburgh	2,087,772,000	878,030,000	919,300,000
Sewickley	194,175,000	10,132,000	123,600,000
Freeport	2,088,153,000	1,650,000	1,029,000,000
Redstone	151,380,000	.....	75,700,000
Waynesburg	316,854,000	3,216,000	199,800,000
Upper Kittanning	89,280,000	2,016,000	59,000,000
Lower Kittanning	302,120,000	4,500,000	198,000,000
Total	5,229,734,000	899,544,000	2,604,400,000

*The total area of Fayette County is 824.0 square miles.

Detailed tables of the coal reserves in each township have been prepared and will appear in printed form in a report now being written on the bituminous-coal fields of the State of Pennsylvania. They can be consulted in the office of the Topographic and Geological Survey, or figures for a single township will be sent on request.

Investigation of the occurrence and distribution of the forms of sulphur in coal has been continued during the recently ended fiscal year at Urbana, Ill., by the U. S. Bureau of Mines, in co-operation with the Illinois Geological Survey and the University of Illinois under two general heads: (1) The distribution of the forms of sulphur in the coal bed, and (2) sulphur forms in coal. Both are closely co-ordinated with coal washing. The steadily decreasing reserves of low sulphur-coal in certain sections renders it essential to have information on the occurrence and distribution of the forms of sulphur present in coals higher in sulphur, so that intelligent efforts may be directed toward reduction of sulphur and then utilization. The distribution of the forms of sulphur in coal beds was investigated at two mines in southern Illinois. A similar though less intensive investigation was made at a mine operating in the Pratt seam in Alabama. Since this work was done, one mine has materially reduced the sulphur content of both raw and washed coal by developing their lower sulphur areas. The work on the sulphur forms occurring in coal is being conducted with the object of correlating the occurrence of sulphur forms with the washability of various coals with respect to sulphur reduction. During the year all the raw coal upon which washing tests were made and the washed products have been examined for the various forms of sulphur. It has been found that the organic sulphur content of a raw coal plus its content of finely disseminated pyrite sulphur fixes a limit below which no reduction in sulphur can be effected by ordinary coal-washing methods.

Problems that develop in the mechanical preparation of coal in the Central and Eastern coal fields are being investigated at the Central experiment station of the U. S. Bureau of Mines at Urbana, Ill., in co-operation with the University of Illinois and the Illinois Geological Survey. Work on coal-cleaning methods is being continued, as the problem of cleaning coal is receiving more attention in the bituminous-coal mining industry. A study has been made of the methods of examining a coal as it exists in the raw state, in order to determine the practicability of improving it by coal-cleaning processes.

Problems of Operating Men

Edited by James T. Beard

Finding the Way to Industrial Peace

Solving the Labor Situation by the Golden Rule —Spirit of Goodwill and Co-operation Needed —Mutual Dependence of Capital and Labor

WITH much interest I read the excellent article of M. J. Facemeyer, entitled "Peace and Harmony," *Coal Age*, Sept. 28, p. 499. I was much impressed with the truth of his opening statement, which reads as follows: "Just now, nothing is of more interest and importance than suggestions looking to the promotion of peace and harmony in the general rank and file of the coal-mining industry."

Reading this article recalls the statement made by Roger W. Babson, in his report on the social, economic and political problems that confront the American people. As quoted in *Coal Age*, Vol. 17, p. 364, Mr. Babson says, "The need of the hour is more religion. The solving of the labor situation is wholly a question of religion."

As I understand it, the report of Mr. Babson seems to show that the recognition of God, in the financial affairs of men, is the only basis for industrial peace and lasting prosperity. It is, I believe, the only hope of a permanent settlement of the present industrial disturbances.

Our Greatest Need Today

We all realize, today, that the suggestions of this student of social and economic conditions have not been put into practice by either capital or labor. Controversies between these two factors of industry still continue, paralyzing business and bringing ruin to more and more innocent and helpless people, as the days go by.

To the thoughtful man, the greatest need of our country, today, is not the heralded mountain wave of prosperity; but, instead, a gentle wave of goodwill and co-operation in the hearts and minds of men, whether they labor with their hands or with their capital and brains.

Too often the question of right and wrong has not been mentioned as a factor in the adjustment of industrial differences. Instead, higher wages and larger profits have confronted each other in a hopeless struggle for ascendency. It is victory or defeat, for one side or the other, regardless of the cost. How different would be the aspect, if greed, hatred and selfish ambition was to give place to the practice of the Golden Rule, which is the only solution to these problems.

No wisdom is required to perceive that our present industrial controversies can never be permanently adjusted if capital and labor continue to seek to humiliate each other. Capital can never overcome labor by force and reduce it to starvation wages. On the other hand, labor cannot force capital to concede unjust demands that would destroy the country's business.

Prevailing Disregard for Law

Prosperity can only be permanent when it smiles alike on both capital and labor. It is not new laws or legislation that is needed; but the spirit of goodwill and co-operation must dominate. Never, in the history of our country, has there been so little regard for the supremacy of the law and its enforcement as there is today.

There is no need to rehearse those wanton acts of murder and destruction at which the world has so recently stood aghast. What is most discouraging is the evident approval given to such dastardly doings by local organizations and communities.

There is no mistaking the fact that dangerous un-American principles are present with us. Certain elements among our laboring classes have spread their poisonous doctrines, to such an extent that the fires of hatred and selfishness now smolder in the hearts of their helpless victims. It stands in hand for the better element of all classes of workmen and citizens alike, to be loyal in the preservation of those American principles of justice and individual rights, or these will soon be destroyed forever.

Capital and Labor Problems

The problems that confront industry, today, have grown to proportions that require level-headed judgment in the recognition of individual rights. All will agree that labor should receive something more than a living wage, in return for efficient service. Labor is entitled to a profit on its toil, as truly as invested capital demands a reasonable gain for its use. Labor must provide against the proverbial "rainy day," and capital must safeguard *its* interests against the fluctuations of trade.

When one considers the mutual dependence of capital and labor, the one on the other, it is hard to understand why labor should want to embarrass capital, or capital desire to humiliate labor. So akin are their interests that one is as much bound to promote and protect the welfare of the other, as though it was their own.

Both capital and labor are important in their respective spheres; both are indispensable factors in the industrial enterprises of the country. In my opinion, the time has fully come when the old order of things will be exchanged for the new. A more humane and Christian spirit must assert itself and prevail, while the old weapons of boycott, strike and labor warfare are forever laid aside.

In closing, let me say there is only one remedy that can be applied with any assurance of permanent success. It will be found in a return to the teaching of the Man of Nazareth, on the part of both labor and capital. There will then be no disposition to do anything but right in the treatment of another and the problem will be solved.

Dayton, Tenn. JOHN ROSE.

Keeping the Mine Safe

Humidifying mine air with steam— Broadcasting salt in the airways— Removing all accumulations of dust —Spraying system not effective— Preventive measures more reliable.

READING the article of F. C. Cornet, *Coal Age*, Aug. 3, p. 169, dealing with the question of humidifying air currents by steam, leads me to offer a few comments on this and other methods of keeping the mine safe.

In regard to this method of humidifying mine air, I naturally assumed that the main haulage roads are the return airways, although it is not so stated in the article. In mines where the main haulage roads are made the intake airways, the use of steam would be objectionable, as it would seriously inconvenience the drivers and men working on the bottom.

Humidifying the Mine by Steam

Assuming an intake air-course, however, I can heartily recommend the use of steam for humidifying the air current. Whether a straight line of pipe is installed for that purpose or a radiator system is employed is immaterial, as either method can be made alike effective.

In the first place, I would suggest a general cleanup of all roads and air-courses, removing any accumulation of dust and hauling it out of the mine. If a steam line is used the pipes should be tapped at short intervals, by drilling small holes to permit the escape of the

steam. The pipes should be hung overhead, with the bleeders on the underside. A branch line of pipes should reach every district in the mine.

Broadcasting Salt in the Mine

Let me suggest, here, that the broadcasting of salt on the roads, travelingways and air-courses throughout the mine is a good plan. By absorbing moisture from the air, the salt keeps everything in a damp condition and prevents the fine dust from rising and floating in the air.

At times, I have seen the mine drainage arranged to collect the water in a sump where a high-pressure pump was installed to force the water through a pipe system by means of which it is sprayed on the roads and travelingways. Three or four cross-pipes would sometimes be arranged across the intake airways and drilled with a line of small holes, thereby forming a spray for humidifying the intake air.

In my opinion, no spraying system is thoroughly effective. I believe that watering the dust does not increase the safety of the mine, or render the dust inexplosive. If the mine is to be made safe, other means than watering and spraying the passageways must be evolved.

Necessity of Maintaining Good Circulation of Air

One of the chief factors, in mine safety, is maintaining a good circulation of air throughout the workings. To do this, it will often be necessary to repair doors, stoppings and air bridges, to prevent air leaks, and erect brattices to cause the air to sweep the face of the coal.

Blasting the coal is next in importance. Where the coal is hard and solid shooting is practiced, nothing but permissible explosives should be used. Every effort should be made to reduce the breakage of coal by avoiding excessive charges of powder. It is also important to use cars that will not require to be loaded above the sides.

The loading of cars with topping is a bad practice. When so loaded, much of the coal falls off the car in transit and is ground into fine dust by the car wheels and the travel of men going to and from their work. These and many other items that could be mentioned play an important part in making the mine safe.

Oscar H. Jones.

Wilder, Tenn.

Continuous Car Supply in Rooms

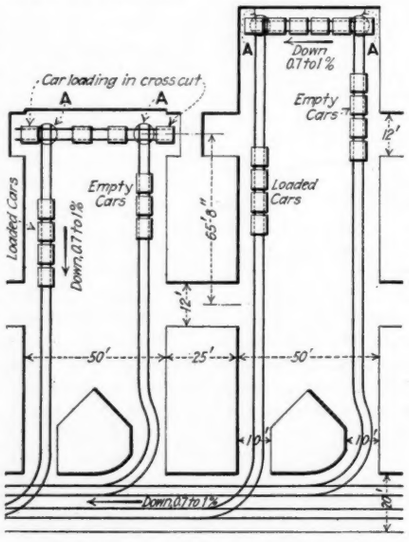
Expediting the loading of cars at the face—Use of turntables suggested—Practice in European mines—Sundry details in arrangement of tracks and cars.

IN THE issue of *Coal Age*, Aug. 24, I notice two suggestions for expediting the loading of coal at the working face in mines. The first of these occurs in the interesting article of E. N. Zern, page 283, entitled "Enlisting the Turntable in Mechanical Coal Loading." The second is found in the letter of Charles M. Schloss, page 288, who suggests extending the room track along the face of a room, so as to permit several cars to be loaded at one time.

Referring to the article of Professor Zern, it seems to me that the suggested use of turntables in coal mines deserves more than passing attention. Besides the particular case referred to in the article mentioned, there are many places, in the average coal mine, where turntables could be used to advantage.

While I am unable to refer to a single case where turntables are used in present-day coal mining, it can be said they are a standard article of equipment in the metallic mines, on the European continent. As far back as the 80's, I remember seeing turntables in use in the phosphate mines of Belgium and in the Somme department in France.

In this connection, allow me to illustrate, by means of the accompanying



SHOWING TRACK ARRANGEMENT IN ROOMS

sketch, how turntables were used in the rooms of one phosphate mine that was famous about thirty-five years ago, in the region of Mons, in Belgium. The deposit mined there was a bed of phosphatic chalk, which was a mixture of chalk with a certain amount of fine dust and pure phosphate of calcium.

The phosphate was recovered from the finely crushed chalk by washing. The ore was first mined by hand and then shot down with either dynamite or black powder, depending on the condition of the strata. The bed varied from 14 to 18 ft. in thickness, and the cover did not exceed 75 or 80 ft.

Double-Track Room with Cross-Track and Turntables

As shown in the figure, double-track rooms were driven 15 m., or nearly 50 ft., wide. The two tracks were laid, one along each rib of the room, and a cross-track and pair of turntables served to connect them, at the face.

To show how this arrangement permitted a continuous supply of cars at the face, let me say that a driver would send in eight or ten empties on the righthand track, as close to the turntable as possible. Then, when ready to load, the miners would place five or six cars on the cross-track, using the turntable to make the transfer. These cars would all be loaded at one time and dropped out on the lefthand track, by means of the turntable at that end of the face, and hauled away by the driver.

Standard Rail Lengths Conform to Distance Between Crosscuts

The steel rails used were 5 m. (16 ft. 5 in.) long; but there were kept on hand, in each room, four half-rail lengths, which enabled the miners to set the face track forward whenever the face had been advanced that distance. The crosscuts were dug at intervals of 4-rail lengths. Whenever the face track was set where a crosscut had to be driven, rails were laid opposite to the turntable rails, on the rib side. In each room two opposite crosscuts were driven at the same time, half-way through the pillar, the other half being driven from the room adjoining.

Although the cars used were large self-dumping affairs, similar to what were in use by railroad and other contractors in the region; and, though they had a capacity of 2 cu.m.,, or nearly 71 cu.ft. level full, there was no difficulty in handling them over the turntables and across the faces.

My purpose in describing these arrangements thus minutely, is to ask why such an arrangement could not be used in coal mining to advantage. The plan should appeal to any one as affording a continuous car supply at the face and expediting the loading of the coal.

New York City. F. C. Cornet.

Flow of Water in Pipes Under Equal Heads

Attempt to simplify solution of flow of water in pipes under equal heads—Readers can judge for themselves.

HAVING been for several years somewhat of a dabbler in hydraulics, I was interested in the question of an Ohio student, appearing in *Coal Age*, Oct. 5, p. 551. While the answer given to the problem is entirely correct, it seems to me that the inquirer is left in the position of simply accepting it without knowing the reason.

The inquirer refers to a dispute regarding the number of 3-in. pipes required to carry away the same quantity of water as a single 12-in. pipe, all the pipes being under equal heads. Since the sectional area of the 12-in. pipe is equal to the sum of the areas of sixteen 3-in. pipes, it was claimed that the quantity of the flow would be the same in each case.

In replying to this question, the editor has shown that this is true only for an equal velocity. He states, "A more practical view of the question, however, is to consider the flow of water in these pipes as under a constant head or pressure," which is true.

Then, he adds, "owing to the frictional resistance in the pipes, a constant head will not produce the same velocity or quantity in pipes of different diameters," and goes on to explain by reference to the well-known formula for the unit pressure producing a flow of any fluid in a conduit.

Would it not have been better to have explained the situation somewhat as follows: Experiment has shown that the resistance of the flow of water in pipes is, approximately, proportional to the square of the velocity of the flow and also to the area of wetted surface of the pipe. The total pressure applied to overcome this resistance is equal to the unit pressure (lb. per sq.in.), multiplied by the sectional area of the pipe, expressed in square inches.

Now, the unit pressure corresponds to the head, which is the same for all the pipes. Again, the sectional area of a single 12-in. pipe being equal to the sum of the areas of sixteen 3-in. pipes, the resistance to the flow is the same in each case; and we can write $pa = v^2 s$, where p = unit pressure; a = total sectional area, in each case; v = velocity of flow; s = total wetted surface in the pipes, in each case.

Then, assuming equal lengths for all the pipes, and expressing the values of a and s in terms of the diameter d, remembering that $v = q/a$, we have

$$pd^2 \text{ varies as } \frac{q^2}{d_4} \times d$$

But, the unit pressure p being constant, we have by transposition q^2 varies as d^5; and, finally, q varies as $\sqrt{d^5}$. In other words the diameter of the 12-in. pipe being four times that of a 3-in. pipe, the flow of water in the former, under the same head, will be $\sqrt{4^5} = \sqrt{1{,}024} = 32$ times that in the latter. Therefore thirty-two 3-in. pipes will be required to give the same flow as one 12-in. pipe, under the same head.

Charleston, W. Va. T. L. F.

[Another letter of a similar nature to the foregoing was received from Thomas Anderson, Barnesboro, Pa. Neither of these gentlemen appear to have turned over the leaf and read the conclusion of the reply to this inquiry on page 552, as their letters contain nothing different from what is there stated.—Editor.]

Inquiries Of General Interest

Interchange of State Certificates

Certificates of Competency Granted by Examining Board in One State Honored by Similar Board in Another State —The Practice of Interstate Certificates Growing Rapidly

AS A subscriber to *Coal Age*, kindly permit me to ask for a little information regarding a certificate of competency granted by one state, being accepted by the examining board in another state. For example, I hold a first-class certificate granted me by the state examining board, in Alabama. For certain reasons, I now desire to remove to Illinois and have been wondering whether my certificate would be of any use to me in that state. If not, what are the requirements, in Illinois, in order that a man can take the examination for a certificate authorizing him to act as mine manager (foreman)? Is a first-class certificate granted in Alabama equivalent to a mine manager's certificate in Illinois? Any information on this subject will be greatly appreciated. R. FORTUNA.

Nauvoo, Ala.

This is the old question of interstate certificates, which has been so frequently discussed in mining papers and at meetings of mining men. While the practice of accepting certificates granted candidates in another state is by no means universal, the custom has been growing during the past few years; and many state examining boards now are willing to accept such a certificate when presented by a candidate coming from another state, provided the examinations are of the same grade and importance.

The question of accepting such certificates on the part of the Illinois Examining Board was recently put up to the director of the Department of Mines and Minerals, Robert M. Medill, Springfield, Ill. In his reply, Mr. Medill states that since his appointment as Director of the Department of Mines and Minerals he has taken the position that the department should honor a certificate from another state where the candidate was required to pass an examination similar to that given by the department in Illinois. Director Medill adds that such a candidate, however, would be subjected to a slight oral examination, in order to determine his fitness for the position desired and confirm his acceptability by the Illinois Mining Board.

It is needless to say that the practice of interstate certificates, properly safeguarded by subjecting a candidate to a sufficient oral examination to confirm the certificate he presents, is in accord with what has been advocated in *Coal Age*, for a number of years.

The subject of interstate certificates of competency was discussed at a meeting of the Mine Inspectors Institute of America several years ago. The concensus of opinion at that meeting was in favor of such certificates being given due consideration by state examining boards when presented by candidates applying for examination.

To what extent the certificate can be accepted will, of course, depend on the respective standards of examination in the two states, and this can only be determined by the examining board in considering a candidate's application.

Size of Pulley Required

Ratio of diameters of pulleys on motor and fan same as the inverse ratio of their respective speeds.

IN THE operation of a booster fan having a 24-in. drive wheel, what size of pulley will be required on the shaft of a motor running at a speed of 1,500 r.p.m., in order to drive the fan at 600 r.p.m.? MINE FOREMAN.

————, Ky.

Assuming there is no slippage of the belt connecting the fan with the motor, the ratio of the diameter of the pulley on the motor shaft, to the diameter of the drive wheel on the fan shaft, must be equal to the ratio of the required speed of the fan to that of the motor.

In other words, the diameter ratio is equal to the inverse speed ratio. Then, calling the required diameter of the pulley on the motor shaft x, we have

$$\frac{x}{24} = \frac{600}{1{,}500} = \frac{2}{5}$$

$$x = 2/5 \times 24 = 9.6 \text{ in.}$$

Estimating Available Tonnage

Approximate rule for computing available tonnage of coal underlying a given tract—Allowance per foot-acre varies with quality of coal—For inclined seams divide estimated tonnage by cosine of angle of inclination.

A DISCUSSION has recently arisen among some coal men, in this locality, concerning the available tonnage underlying a 1,400-acre tract, the seam being flat and averaging 80 ft. in thickness. Allowing 1,400 tons per acre, the estimated tonnage of coal, in this seam, would be 156,800,000 tons. This amount being disputed by some, it was decided to ask *Coal Age* if it is correct. ENGINEER.

Meeker, Colo.

An approximate rule of thumb that has been often used in computing the weight of coal underlying an acre of land, assuming a flat seam of bituminous coal of average quality, is to base the estimate on 1,000 tons per foot-acre.

Later, however, when the extraction of coal became more complete, this rule was discarded and the estimate based on 100 tons per in. per acre, or 1,200 tons per foot-acre. Both of these rules had reference to bituminous coal, in a flat seam. Anthracite will average 3

greater, in weight, than bituminous coal; but if measured in long tons (2,240 lb.) instead of short tons (2,000 lb.), practically the same allowance can be made.

On this basis, the estimated tonnage of coal underlying this 1,400-acre tract, the seam lying flat and having a thickness of 80 ft., would be $1,400 \times 80 \times 1,200 = 134,400,000$ short tons.

When a seam has any considerable inclination, this estimated tonnage must be divided by the cosine of the angle of inclination. It is understood that the application of this rule for computing available tonnage is only approximate and will vary with the quality of the coal and the percentage of extraction. The rule given allows about 80 per cent of extraction for average coal.

Examination Questions Answered

Miscellaneous Examination Questions

(Answered by Request)

QUESTION—*(a) State the best method of timbering, in bad roof with cleatage at right angles to face. (b) Under roof with slabby drawslate. (c) With hard top and false bottom.*

ANSWER—(a) Assuming the face cleats of the coal are at right angles to the face of the breast, the room is advancing on the butts or ends of the coal. This is not as hazardous under bad roof, as when driving "face on," or when the face cleats are parallel to the face of the coal, particularly if the face cleats are working more freely than the butt cleats.

However, even advancing on the ends of the coal, under bad roof, the posts must be set at regular intervals apart and as close to the face as practicable, with broad cap-pieces, not less than 2 ft. in length and 2 in. thick; or long crossbars or booms may be used above the posts, for the better protection of the men working at the face.

(b) Where the coal is overlaid with a drawslate that breaks in slabs, this must be well timbered with posts having good cap-pieces, for a distance of four or five yards back from the face. As the face advances, the rear posts are drawn and the slate allowed to fall.

(c) With hard top and soft bottom, the posts must be set on footboards or mudsills. It is well to use soft cap-pieces above the posts, to show the weighting of the roof and amount of pressure.

QUESTION—*What precaution would you take in drawing stumps in a 3-ft. seam where 30 in. of roof had been shot down for height?*

ANSWER—The drawing of stumps, under these conditions, is dangerous, owing to the weight of material above the stump and which has no other support when that is removed. Much will depend on the size of the stump, the character of the coal and that of the material above it. No chances must be taken in working out stumps, under these conditions. The safest plan is to drill and blast the coal after setting what timbers are necessary to protect the workmen while so engaged.

QUESTION—*What is the best method of humidifying a dusty mine?*

ANSWER—The most practicable method of humidifying the air current in a mine is to introduce steam into the air current, on the intake airway, after heating the air by causing it to pass over a system of radiators or steam coils. The waste steam of this heating system is then permitted to escape into the warm air current, through perforations in the pipes. The escaping steam should be made to impinge on baffle plates or canvas curtains, for its better distribution.

QUESTION—*Find the mine resistance when the water gage reads 2.5 in., in an airway 6 x 10 ft. in cross-section.*

ANSWER—A water-gage reading of 2.5 in. indicates a pressure of $2.5 \times 5.2 = 13$ lb. per sq.ft. The sectional area of this airway is $6 \times 10 = 60$ sq.ft.; and the mine resistance is, therefore, $60 \times 13 = 780$ lb.

QUESTION—*What pressure and water gage will be required to pass 60,000 cu.ft. of air per min., through an airway 8 x 10 ft., 4,000 ft. long?*

ANSWER—The perimeter of this airway is $2(8+10) = 36$ ft.; and the rubbing surface is, therefore, $36 \times 4,000 = 144,000$ sq.ft. The sectional area of the airway is $8 \times 10 = 80$ sq.ft. The pressure required to circulate 60,000 cu.ft. per min. through this airway is, therefore,

$$p = \frac{0.00000002 \times 144,000 \times 60,000^2}{80 \times 80 \times 80} = 20.25 \text{ lb. per sq.ft.}$$

The corresponding water gage is, then, $20.25 \div 5.2 = 3.9$ in., nearly.

QUESTION—*What will be the diameter of an upcast shaft necessary to pass 200,000 cu.ft. of air per minute with a velocity of 500 ft.?*

ANSWER—Dividing the air volume, in cubic feet per minute, by the velocity, in feet per minute, gives the required sectional area of the shaft; thus $200,000 \div 500 = 400$ sq.ft. The required diameter of the shaft is therefore $d = \sqrt{400/0.7854} = 22.56$ ft.

QUESTION—*A certain mine has two shafts, each 500 ft. deep. The temperature of the downcast is 50 deg. F. and that of the upcast 150 deg. F.; what is the motive column?*

ANSWER—The motive column can be estimated in terms of either the downcast or the upcast air. The downcast air being the heavier will give a shorter motive column than the upcast air. The calculation is as follows:

$$\text{Down cast air, } M = \frac{(T-t)\,D}{460+T} = \frac{(150-50)\,500}{460+150} = 82 \text{ ft., nearly}$$

$$\text{Up cast air, } M = \frac{(T-t)\,D}{460+t} = \frac{(150-50)\,500}{460+50} = 98 \text{ ft.}$$

QUESTION—*How is it possible to divide the air proportionately between two or more splits?*

ANSWER—Regulators must be placed in those splits that are passing more than their desired proportion of the air. The opening in each regulator must then be adjusted to give the desired results.

QUESTION—*What is the law regarding the method of approaching abandoned mines?*

ANSWER—The Indiana Mining Laws (Chap. 258, Sec. 14) require that places being driven toward an abandoned mine shall not exceed eight feet in width; and a borehole shall be kept in the center of each place and not less than three yards in advance of the face. Also, sufficient flank boreholes must be kept on each side of the place so driven.

QUESTION—*What are the causes of mine fires? How would you proceed in case of a fire in a mine of which you had charge? Give full details.*

ANSWER—Mine fires may result from the careless use of open lights, in proximity to combustible material; the ignition of a gas feeder by the flame of a shot, and the fact not discovered until the coal has been ignited and the fire has spread; spontaneous combustion of fine coal and slack, buried in the waste in abandoned places; the ignition of combustible matter by the sparking of wires, short-circuiting of the current, etc.; the ignition of gas or dust by similar causes; explosion of gas, dust or powder, due to careless handling or disregard of safety precautions and rules.

In case of fire occurring in a mine, the men working therein should be promptly notified and withdrawn by the safest route possible. Treatment of the fire will depend wholly on its location and the headway it has gained. Immediate steps must be taken to get water to the fire, and to prevent the gases and smoke from entering the workings, as far as this may be possible, by short-circuiting the current at some accessible point inby of the fire. If progress is slow in gaining control of the situation it may become necessary to seal off the fire by building air-tight stoppings. The advisability of this proceeding can only be determined on the ground. Only as a last resort should recourse be had to the flooding of the mine, in order to extinguish the fire.

Critics of British Coal Strike Settlement Charge Juggling of Production Costs

By C. H. S. Tupholme
London, England

Some critics of the British coal strike settlement of June, 1921, contend that the proportion of profits to wages is unduly high and that the ratio will have to be adjusted in favor of the men; others profess to believe that the scheme lends itself to figure "juggling" by the owners. Vague charges have from time to time been brought against the colliery companies in respect of "rigging" the costs of production. It has been alleged that "other costs"—i. e., items other than wages, stores and material—have been piled up in order that the employers may benefit at the expense of the men. It is true that none of the responsible leaders of the workmen has made such an accusation, but there is some evidence to show that others have not scrupled to sow the seeds of suspicion among the men with the object of stirring up discontent and arousing hostility against the pact of last year.

In the circumstances it is necessary to emphasize the fact that the independent chairman of the National Board has laid down categorically every item which is to be treated as a working cost other than wages, while he has further carefully laid down the basis upon which items are to be calculated. In addition to timber and stores, the following have been admitted as "other costs": (1) Depreciation and renewals; (2) freehold coal royalties; (3) surface damage and restoration of service at end of lease; (4) workmen's compensation payments and insurances; (5) national health and unemployment insurance (owners' proportion of contributions); (6) remuneration of owner managers; (7) fire brigade, rescue, and aid services, etc.; (8) welfare levy payable under the Mining Industry Act, 1920; (9) allowance to make up subsistence wages; (10) local rates; (11) remuneration of directors, mine manager, general manager, and secretary; (12) remuneration of clerical and administrative staff other than No. 11; (13) pensions; (14) general expenses; (15) coal and power purchased and consumed; (16) repairs and renewals of colliery wagons; (17) schedule A assessment of workers' houses and occupiers' rates borne by owners and not recoverable; (18) wagon charges; (19) other debits.

The accountants acting in the men's interests have access to all accounts bearing on these costs, and they are, therefore, in a position to check every item and satisfy themselves that everything is as it should be. The men themselves are now able to obtain much fuller and more detailed information that was available when the argument was first put into operation, and so they are afforded ample safeguard against any undue inflation of costs.

Overhead Expenses in American Coal Mines Considered in Relation to "Rigging"

By W. B. Reed
Washington, D. C.

Mr. Tupholme's article on the possibility of "rigging" or padding the cost of coal in order to increase the actual profit to the operator or owner under the British system of a division of profits between the owners and the miners gives us an opportunity to compare "overhead expenses," as we designate what the English accountants term "Other Costs."

A comparison of the items of overhead and other operating expenses set out by the British National Board with the generally accepted items in this class as recommended by the cost accounting committee of the National Coal Association shows considerable similarity of treatment. There are several items embraced in the British plan which do not appear in the accounting practice here. For instance, "surface damage and restoration of surface" does not appear specifically as an item of cost in our cost sheets, although such items are properly chargeable to operation. The American practice is to set up a fund for mining hazards and to charge the cost of such contingencies to this account when they occur. Our accounting practice does not recognize any specific account of national health and unemployment insurance, our nearest approach being group life insurance as carried by some concerns. We have no legal liability such as is termed "welfare levy," the welfare work, where it obtains, being the voluntary contribution of the operator, while in Great Britain it is apparently obligatory on the owner to finance to an extent such activities. Neither do we have "allowance to make up subsistence wages." The item of pensions is one which we would ordinarily consider as a charge against income rather than a direct item of cost.

It may be profitable, perhaps, to examine our own generally accepted method of cost determination to see if it is open to the charge of "rigging" or padding of the items indicted in the English mind. The accounts which lend themselves most readily to the abuse mentioned are the depreciation account, the accounts carrying officers' salaries and the supply accounts. Of these, the depreciation account is the most difficult to police, for when based on a rate per cent it is a matter of good judgment as to the rate to be used. Conditions in each separate mine, the policy of the management as to maintenance and replacements, and the life of the coal all have to be taken into consideration. When based on exhaustion, or, in other words, on the depletion plan, a more even measure of the consumption of capital by depreciation may at times be obtained. But the Internal Revenue Bureau has held that depreciation may be forestalled and "sound value" maintained by a policy of the management in keeping machinery and equipment up to its productive capacity.

Undue Increase in Officers' Salaries Unlikely

With respect to officers' salaries and expenses, there is little likelihood of their being increased unduly except in the case of closely held corporations, in which the disbursement takes the form of a dividend. The Internal Revenue Bureau is continually on the lookout for this method of distributing earnings and it cannot long pass unchecked. The same "policeman" is always on the lookout for the former item of depreciation and for the abuse of the practice of charging of additions and betterments to the supply account.

In the last-named item the line of separation in the past few years has been quite clearly drawn. If the item purchased or installed will materially increase production or materially and permanently decrease production cost, it should be capitalized; otherwise after the development stage is passed there should be no capital additions, but everything of this nature treated as operating cost.

The studies made by the engineers' committee of the United States Fuel Administration and by the Federal Trade Commission with respect to coal costs are interesting as showing the small difference between "reported costs" and "adjusted costs" during the period in which the coal industry reported to these bodies. These adjusted costs were used by the Fuel Administration engineers in their cost studies. This committee frequently found it necessary to add to the item of salaries of officers and management as well as to deduct from others, that a representative showing might be made. The engineers committee reported that in their first study on a production of nearly 75,000,000 tons of coal the average cost was "adjusted" exactly 1c. and that they *increased* the cost by the adjustment.

The Federal Trade Commission in its report on cost of production of Pennsylvania bituminous coal shows a revision downward from all causes of about 7c. per ton for the year 1918. The report says, "The Commission is able to point out that the costs of from 90 to 95 per cent of the tonnage reported from a given field were as a rule accepted as substantially correct. Certain revisions were found necessary, however, and while generally they operated to reduce costs, in some instances they increased them. Most of the revisions occur under 'general expense,' where most of the inflations were found to have taken place."

Preliminary Statistics of Production of Coal in 1921

(Exclusive of product of wagon mines)

Ohio

County	Loaded at Mines for Shipment (Net Tons)	Sold to Local Trade and Used by Employees (Net Tons)	Used at Mines for Steam and Heat (Net Tons)	Made into Coke at Mines (Net Tons)	Total Quantity (Net Tons)	Total Value	Average Value per Ton	Number of Employees — Underground — Miners, Loaders Etc. (a)	Underground — All Others	Surface	Total	Average Number of Days Worked
Athens	3,703,278	42,776	90,536	.....	3,836,590	$10,038,000	$2.62	5,356	1,730	873	7,959	102
Belmont	11,211,844	276,322	112,984	.....	11,601,150	29,845,000	2.57	9,318	3,093	1,480	13,891	179
Carroll	224,031	34,944	6,648	.....	265,623	717,000	2.70	342	125	60	527	159
Columbiana	529,531	59,511	15,686	.....	604,728	1,866,000	3.09	825	301	171	1,297	150
Coshocton	152,486	53,149	1,531	.....	207,166	562,000	2.71	390	133	74	597	101
Gallia, Morgon and Washington	199,603	3,246	2,792	.....	205,641	540,700	2.63	311	103	47	461	121
Guernsey	2,817,409	59,957	104,789	.....	2,982,155	8,143,000	2.73	2,802	1,322	410	4,534	133
Harrison	1,589,938	16,758	28,734	.....	1,635,430	4,219,000	2.58	1,057	359	592	2,008	136
Hocking	815,224	43,950	10,696	.....	869,870	2,454,000	2.82	1,471	433	313	2,217	80
Holmes	.....	4,535	.....	.....	4,535	14,000	3.09	11	.....	.....	11	167
Jackson	121,831	48,054	8,718	.....	178,603	503,000	2.82	589	199	113	901	64
Jefferson	4,042,864	253,026	57,793	187	4,353,870	11,934,400	2.74	3,526	1,323	1,125	5,974	137
Lawrence	14,311	42,397	861	.....	57,569	122,000	2.12	168	45	37	250	91
Mahoning	463	35,528	132	.....	36,123	107,300	2.97	73	12	9	94	163
Medina	.....	3,174	10	.....	3,184	16,100	5.06	10	1	1	12	248
Meigs	889,204	15,430	27,401	.....	932,035	2,535,000	2.72	1,383	557	276	2,216	123
Muskingum	124,855	57,391	3,229	.....	185,475	478,000	2.58	387	105	99	591	77
Noble	513,768	6,884	18,319	.....	538,971	1,408,000	2.61	543	265	66	874	136
Perry	1,505,431	47,456	31,130	.....	1,584,017	3,928,000	2.48	2,213	689	668	3,570	89
Portage, Summit and Wayne	61,413	22,876	13,772	.....	98,061	394,000	4.02	152	74	57	283	115
Stark	99,340	166,053	26,497	.....	291,890	985,000	3.37	484	136	102	722	151
Tuscarawas	1,065,968	266,373	28,438	.....	1,360,779	3,604,000	2.65	1,448	478	455	2,381	133
Vinton	105,601	163	3,547	.....	109,311	273,000	2.50	284	72	59	415	113
Total	29,788,393	1,559,953	594,243	187	31,942,776	$84,686,500	$2.65	33,143	11,555	7,087	51,785	134

North Dakota

Adams, Bowman, Dunn, Hettinger and Oliver	87,999	5,752	4,056	.....	97,807	$264,000	$2.70	63	20	27	110	218
Billings	21,138	12,201	.....	.....	33,339	88,000	2.64	24	7	10	41	235
Burke	108,152	11,704	3,866	.....	123,722	301,000	2.43	7	3	73	83	177
Burleigh	217,845	10,589	8,990	.....	237,424	651,000	2.74	150	71	61	282	171
Divide	33,118	4,722	44	.....	37,884	115,100	3.04	45	10	24	79	147
McLean	11,229	9,170	270	.....	20,669	53,400	2.58	29	11	8	48	181
Mercer	120,597	1,087	8,224	.....	129,908	359,000	2.76	81	48	39	168	265
Morton	9,400	20,451	.....	.....	29,851	63,000	2.11	19	5	6	30	162
Stark	33,020	6,987	2,697	.....	42,704	117,000	2.74	27	11	16	54	219
Ward	31,696	26,907	.....	.....	58,603	166,000	2.83	69	9	13	91	151
Williams	26,756	25,980	256	.....	52,992	152,000	2.87	52	14	12	78	193
Total	700,950	135,550	28,403	.....	864,903	$2,329,500	$2.69	566	209	289	1,064	194

Oklahoma

Atoka and Haskell	79,710	800	3,400	.....	83,910	$400,000	$4.77	20	12	48	80	140
Coal	173,384	4,558	9,509	.....	187,451	912,000	4.87	526	272	110	908	91
Craig, Muskogee, Rogers and Wagoner	25,403	2,100	.....	.....	27,503	119,000	4.33	3	.....	55	58	191
Latimer	319,401	1,871	23,387	.....	344,659	1,611,000	4.67	573	360	164	1,097	115
Le Flore	283,276	2,774	10,764	.....	296,814	1,326,000	4.47	404	173	101	678	165
Okmulgee	958,393	1,621	14,443	.....	974,457	3,939,000	4.04	1,573	594	429	2,596	119
Pittsburg	1,209,240	9,431	64,880	.....	1,283,551	6,532,000	5.09	1,750	983	398	3,131	176
Tulsa	159,574	2,404	2,300	.....	164,278	707,000	4.30	161	31	124	306	135
Total	3,208,381	25,559	128,683	.....	3,362,623	15,546,000	4.62	5,000	2,425	1,429	8,854	140

Montana

Carbon	1,188,979	39,972	86,771	.....	1,315,722	$4,702,000	$3.57	930	405	323	1,658	181
Cascade	634,622	31,065	20,759	.....	686,446	1,877,000	2.73	588	212	154	954	156
Hill	.....	9,030	.....	.....	9,030	28,000	3.10	10	3	3	16	186
Musselshell	641,931	7,705	12,451	.....	662,087	2,090,000	3.16	640	313	132	1,085	111
Roosevelt	200	2,000	.....	.....	2,200	5,000	2.27	7	...	...	7	150
Sheridan	65	9,009	30	.....	9,104	22,300	2.45	18	4	2	24	168
Other Counties (b)	26,547	16,757	6,065	.....	49,369	197,300	4.00	203	127	104	434	41
Total	2,492,344	115,538	126,076	.....	2,733,958	$8,921,600	$3.26	2,396	1,064	718	4,178	143

New Mexico

Colfax	1,643,833	14,975	25,608	30,435	1,714,851	$6,077,000	$3.54	1,601	641	425	2,667	150
McKinley	477,319	9,423	27,903	.....	514,645	2,380,000	4.62	727	353	177	1,257	123
Rio Arriba	19,966	300	450	.....	20,716	65,000	3.14	25	8	7	40	245
Other Counties (c)	184,916	10,056	8,298	.....	203,270	1,063,000	5.23	382	118	113	613	194
Total	2,326,034	34,754d	62,259	30,435	2,453,482c	$9,585,000	$3.91	2,735	1,120	722	4,577	150

(a) Includes also shotfirers. (b) Blaine, Carter, Chouteau, Gallatin, Judith-Basin, Park, Pondera, Richland and Toole. (c) Lincoln, San Juan, Santa Fe and Socorro. (d) In addition to the above, 3,460 tons were produced by small mines and sold to local trade. Total production was therefore 2,456,942 tons and the total sold to local trade and used by employees was 38,214 tons.

Statistics compiled by L. Mann, U. S. Geological Survey, Oct. 21, 1922.

Union Mines in Washington State Resume; Open-Shop Operations Unaffected

In a statement recently issued the Pacific Coast Coal Co. says:

"The union mines in eastern and southern Washington are reopening after five months' idleness caused by the nation-wide coal strike. They are principally railroad mines—several large ones at Roslyn operated by the Northern Pacific R.R. and one near Centralia operated by the Union Pacific, all producing coal for the railroads' own use. But two large producers of commercial coal are included—the Roslyn Fuel Co. and the Roslyn Cascade Co., each with two mines in the eastern Washington district.

"The principal producing properties of western Washington have been working steadily since reopening last year on a basis independent of the union organization.

"With the union properties again operating the state's normal flow of coal will doubtless soon be available, and until further interruptions occur, any danger of a shortage to either industry or household is past. The danger rather is that because of the most severe competition of low-priced fuel oil and of cheaply mined foreign coal, the commercial mines may have difficulty in securing sufficient market to keep steadily working.

"It is fair to assume, however, that because of their more dependable basis of operation and because of having been in a position to supply and keep a continuous hold on their markets during the recent crisis, the western Washington mines will be in the most favorable position to retain those markets.

"The Pacific Coast Coal Co. takes this opportunity of again stating that its policies have not been in any way affected by the recent union settlement, nor will they be by any future developments."

Valuation of Anthracite Lands for Taxation Soars; Schuylkill County Makes 650 Per Cent Raise

Systematic efforts to burden the anthracite industry with taxation amounting to a levy on capital are creating an issue of the highest importance to all coal-land owners in Pennsylvania and to all consumers of coal. With due regard to all the complications arising from the recent strike and to all the possibilities contained in the investigation by President Harding's commission, this matter of taxation is in some phases the most important question before the coal-producing and coal-consuming public.

The hotbed of the present tax movement is in Schuylkill and Northumberland counties, comprising the southern and western middle anthracite fields. The Schuylkill County commissioners, in making their triennial assessment this year, have marked up county valuation for all tax purposes from $99,935,909 in 1921 to $497,510,263 for 1922.

The great bulk of this increase has been placed upon anthracite lands, which were valued at $55,907,496 in 1921 but which are placed at approximately $422,000,000 for 1922, the increase being more than 650 per cent. As the tax rate for 1922 has been placed at 2.75 mills for county purposes, the total tax yield on a basis of 100 per cent collection would be $1,368,153 on the 1922 valuation, and of this $1,160,500 would be taken from coal-land owners.

As matters stood under the 1921 assessment, coal-land owners paid about 65 per cent of the total county tax collected. Under the proposed valuations coal-land owners would have to pay about 89 per cent, allowing for exonerations and non-payment by individuals.

Up to this point only county taxes have been considered. There remain school taxes, road taxes in townships and the ordinary municipal taxes in the boroughs and the City of Pottsville. The new schedule of valuations means that a burden similar to the county taxes will be placed on coal-land owners by school, township, borough and city authorities.

Last year the county tax in Schuylkill was, roughly estimated, about one-quarter of the taxes collected by all agencies, other than state and federal. If this proportion should be carried through on the 1922 valuations it is probable that coal-land owners would be billed for about $5,250,000 county, school and municipal taxes. This is equivalent to about 35c. or 40c. per ton of anthracite production in that county. Applied to the production of domestic sizes only it means a local tax burden of between 60c. and 70c. per ton.

Owners Petition for Setting Aside of Valuations

Naturally, coal-land owners intend to appeal. They have already attacked the action of the commissioners through an equity proceeding brought by the Pardee interests and joined by numerous other coal-land owners as intervenors. The contention was that the commissioners were not proceeding according to law, and the petition was for setting aside their valuations, with instructions from the court to do the work in accordance with the statutes. This bill was dismissed by the Schuylkill County Court, but an appeal has been taken to the Pennsylvania Supreme Court and will be heard early in the January term.

This equity proceeding is no bar to an appeal in law from the commissioners to the Schuylkill County Court on the ground that the valuations are inequitable, excessive or unjust. This appeal in law must be taken by Dec. 6. As the coal-land owners will neglect no effort to obtain relief, this proceeding in law undoubtedly will be well under way before a final decision in the equity case is given by the Supreme Court.

From a political standpoint the commissioners have proceeded admirably, for they have forestalled objections from the selfish or unthinking part of the public. Last year the county tax rate was 9 mills. This year it is to be 2.75 mills. In effect, property owners outside of coal-land owners have been given to understand: "This soaking of the coal companies is a good thing for you. It is true we have increased your valuations a little, but we have cut your rate, so that you will pay less money in taxes on the 1922 valuation than you did in 1921."

The result is an almost entire absence of public opinion against what is in its essence a grave assault against the fundamental industry of the region. The expression "soaking the coal companies" is literally exact, for the county, whose real-estate tax revenue last year (100-per cent basis, 9 mill rate, $99,935,909 total valuation) was $899,423, this year proposes to collect, on the 100-per cent basis, $1,368,153.

The following list embraces most of the important towns and townships within the Schuylkill coal measures, and shows how the County Commissioners have marked up valuations:

District	1921 Valuation	1922 Valuation
Ashland Borough	$2,014,301	$11,106,000
Coaldale Borough	1,993,556	11,501,000
Girardville Borough	896,675	4,031,000
Mahanoy City Borough	2,436,000	7,309,000
Minersville Borough	1,444,767	4,874,000
Shenandoah Borough	4,355,490	12,339,000
Tamaqua Borough	3,122,150	11,592,000
Pottsville City	8,672,107	22,926,000
Foster Township	1,871,993	6,101,000
Hegins Township	3,153,893	12,998,000
Kline Township	945,008	2,540,000
Mahanoy Township	6,084,157	30,900,000
West Mahanoy Township	4,679,205	13,721,000
New Castle Township	1,755,571	7,566,000
Norwegian Township	2,132,458	23,109,000
East Norwegian Township	979,970	9,792,000
Porter Township	3,170,637	17,379,000
Rahn Township	1,742,268	13,652,000
Reilly Township	3,317,321	30,121,000
Schuylkill Township	2,965,728	20,559,000
Tremont Township	3,863,813	28,454,000
Union Township	1,440,764	2,511,000
Walker Township	835,226	12,064,000

The County Commissioners retained as "expert" engineer a man named William H. Monroe, of Scranton, paying him $25 per diem, with expenses. The contention of the coal-land owners, made in the equity case before the Schuylkill County Court, was that the commissioners did not take the reports of the assessors, who are the only valuation officers known to the law, but set aside the returns and had new ones made out. In general the valuations, they hold, do not meet the plain terms of the Pennsylvania tax law, which requires that the market value, actual or as nearly as may be determined, shall be the valuation for tax purposes.

The contention with respect to the latter point is unquestionably well founded. For example, 241 acres of coal in the Pottsville coal reserve changed hands this year. This is nothing but a mineral right, carrying no surface rights. The character of the geological measures in this tract is such that probably as much as 250 ft. of surface support must be maintained. As a practical mining proposition this means that this particular acreage cannot be utilized until mining adjacent to Pottsville gets down below 250 ft., so that this 241 acres can be reached through workings whose outlet is beyond the city limits. There is no prospect of any such development for 40 or 50 years, and maybe longer.

This property was offered at public sale, two bidders appearing and the whole area being sold for $115,000. The valuation for tax purposes last year averaged $250 per acre. In the face of this bona fide transfer, however, the County Commissioners have this year valued this coal for tax purposes at $4,700 per acre, or almost ten times as much as the actual sale price shown in the deeds recorded within the last few months.

The Lehigh Coal & Navigation Co., which has some holdings in the Pottsville basin, is offering at public sale a tract of 574 acres, partly in Pottsville and partly in the two Norwegian Townships and the boroughs of Mechanicsville and Port Carbon. This is a homogeneous property, being of the same general character throughout and containing the

principal veins of that basin—Buck Mountain, Mammoth and Primrose. But this land is valued at $4,700 an acre in Pottsville, $5,198 in the adjacent borough of Mechanicsville, $5,198 in the borough of Port Carbon and $5,320 in the Norwegians—a variation of $620 per acre in valuation in a tract of less than one square mile.

Anthracite taxation conditions in Northumberland County bear a strong family resemblance to those in Schuylkill County. William H. Monroe, of Scranton, who was associated with the late Ellsworth Davies in many of his enterprises with respect to coal lands and coal-land valuations, appears in Northumberland County, as in Schuylkill, as the "expert" adviser of the County Commissioners, although the county has a capable mining engineer in H. F. Reinhardt, of Shamokin.

The total valuation of coal lands in Northumberland County in 1921 was $26,318,880. This year they were marked up into the neighborhood of $100,000,000, and then the commissioners, on June 12, fixed upon $50,553,541 as the final revised valuation. This final revised valuation has been appealed to the Northumberland County Court, and the case will be heard soon. This increase in valuation is not as excessive as that in Schuylkill County, but the whole transaction carried some unusual features which have attracted wide attention in the hard-coal country.

County Commissioners John Roach and David Hughes, over the negative of Commissioner John W. O'Gara, entered into an arrangement with Monroe and with former Judge Fred B. Moser as special assistants, binding themselves to pay each a retainer of $1,000, a minimum fee of $10,000, and to fix their final pay on the basis of one-tenth of 1 per cent for each man on the total increase over the previous valuations.

Monroe and Moser were hired in March, and the final revised valuation was announced by the County Commissioners three months later. For their services these men stood to get $26,318 each, equivalent to nearly $9,000 a month. The Taxpayers' Association at once carried its protest to court, and early last month President Judge Frank H. Strouss and Judge Albert Lloyd united in a lengthy opinion in which they referred to the questionable ethics of contingent fees and an arrangement whereby the special advisers of the commissioners would have a financial stake in any appeal. They concluded by saying that there was no warrant for the course taken by the commissioners, that the contract was against public policy and beyond the powers of public officers and therefore void, and that an injunction should issue restraining the commissioners from issuing warrants for any payment whatsoever to Moser and Monroe for work under the contract, and restraining the County Controller from passing any accounts in favor of these men under the arrangement of last March.

Coal Commission Seeks Aid of Experts to Complete Task at Time Appointed

As the President's Coal Commission draws nearer to the mountain of work which it has been assigned to do, the commissioners are receiving a new impression of the enormity of the task and the short time at their disposal. At a time when every hour is precious they are experiencing exasperating delay in obtaining technicians for their staff. It has become evident during the past week that there is no surplus of coal specialists in the country. As a result the commission is being forced to attempt to draft some of the trained men in the employ of the interests concerned. Due to the limited time and the large amount of work to be done a comparatively large staff of trained men must be put to work. There is a feeling that mine operators, the United Mine Workers, exporters and large consumers of coal should be willing to contribute to the success of the commission's work by being willing to make some sacrifice in the way of releasing specially qualified members of their own staffs.

The managing editor of a large newspaper was summarily discharged a few years ago when the general manager of the paper came into the news room on election night and found his managing editor running an adding machine. At a time when there was such unusual need for broad direction in the handling of election returns the man who was paid to deal with the broad aspects of the situation was devoting himself to the most detailed part of the job. It is believed that the members of the Coal Commission are strenuously avoiding any program of work which would allow them to fall into the error which cost the managing editor his job. Plans for the commission's work have not been worked out as yet in detail but it is believed that the commission will subdivide so that the members best qualified to pursue the broad direction of certain phases of the inquiry can specialize on it, while the work in another line will be carried on by other members.

An idea of the task that is facing the members of the commission may be obtained from some of the alternatives between which they must choose. One of the most important questions the commissioners will have to consider is whether or not they will recommend amendments to the anti-trust statute which will permit consolidations and a scheme of collective marketing.

While it is possible that the commissioners will avoid a flat recommendation as to the rates of wage which they may regard as fair, it is certain that they must go deeply into the wage and living-cost questions. In their report they will be expected to discuss and express opinions on such questions as a minimum wage, a guarantee of employment and unemployment insurance.

It is not unreasonable to suppose that they will consider the place of trade unions in the business of coal production, especially when the organization of coal miners exerts such an important influence on the production of two-thirds of all the coal produced in the United States, which, incidentally, is nearly half the world's output. The commission is called upon to probe deeply into the affairs of the strongest labor union in the world.

While nationalization is specified as one of the points on which the commission must report, it is regarded as probable that it will be dismissed without extended discussion, although it is probable that the commission will see in the cry for nationalization a reflection of the course which the public instinctively pursues when called upon to pay unusual prices as a result of manipulations for which it is in no wise responsible.

Another big question with which the commission must wrestle is that of regulation. The commission will be expected to express its opinion as to whether or not coal falls into a public-utility category.

Commission Query to Miners and Operators Asks Data on Wages and Profits

In the effort to find remedies for the ills of the coal industry the President's Fact-Finding Commission, following three conferences with hard- and soft-coal mine workers and operators last week, sent a questionnaire asking both for suggestions.

Accompanying this questionnaire is a letter from John Hays Hammond, chairman of the commission, bespeaking all possible light on clearing up troubles, so that in the end there shall be a square deal for all concerned. The letter says:

"The commission particularly desires your carefully formulated views as to what efficient policy, if any, could or should be adopted by the government relative to the coal industry, having proper regard to the interests of the mine worker, the mine operator and the public." A résumé of the topics upon which the law creating the commission requires facts (*Coal Age*, Sept. 28, p. 503) accompanies the questionnaire.

"The commission desires you to go carefully over this list of topics," the letter continues, "and advise it in writing at your earliest convenience on the following principles:

"(a) What specific data should be secured under each one of the topics enumerated in the law in order to carry out adequately the direction of the law?

"(b) What in your judgment would be the best and most practicable method for the commission to adopt for securing these data?

"(c) What, if any, topics should the commission investigate in addition to those already enumerated in the law, in

order to give to Congress and the public complete information necessary to the proper understanding of the conditions in the coal industry?

"(d) To what extent are you in position to co-operate with the commission in securing necessary data in such manner as will eliminate in the largest possible degree any basis for criticism of the accuracy or the validity of the data which have been secured?

"In addition to the above, the commission further desires you to advise it in writing at some date in the near future, tentatively:

"(e) What in your judgment are the elements that have caused and are causing the acknowledged demoralization in the coal industry and which are working hardships alike upon the parties engaged in the production of coal and the consuming public?

"(f) What in your judgment are the practical remedies that would eliminate any or all the elements that you feel are responsible for the condition?"

J. D. Rockefeller, Jr., Says Miners Should Have Voice in Working Conditions

John D. Rockefeller, Jr., who is resting at Battle Creek, Mich., telegraphed F. Ernest Johnson, secretary of the research department of the Federal Council of Churches, New York City, last week that the grievances of the coal miners in Somerset County, Pennsylvania, are "well founded." "I have urged with all sincerity and vigor at my command," he added, "that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered."

Mr. Rockefeller's telegram was sent in response to a letter sent by Mr. Johnson to the former calling attention to the strike in parts of central and western Pennsylvania and particularly in Somerset County. "As I understand it," wrote Mr. Johnson, "two large companies in particular, namely, the Berwind-White Coal Co. and the Consolidation Coal Co., are so prominently involved that any remedial policy adopted by them would be likely to have a far-reaching influence. Is it not possible for you as a stockholder to take some effective action with regard to the distressing conditions which now exist in Somerset County?"

In replying to the letter Mr. Rockefeller said that he was not now and never had been a stockholder in or in any way connected with the Berwind-White Co., but was a stockholder with a minority interest in the Consolidation Coal Co. As a minority stockholder Mr. Rockefeller said he had no legal power, even if he were so disposed, to dictate the policies of that company. Moreover, he said, "I must concede the administrative rights of management within certain limits of authority and responsibility. Apart from these usual and recognized limitations, whether legal or administrative, I am now and long have been, a believer in the moral responsibility of stockholders."

"In this special case of Somerset County," continued Mr. Rockefeller, "I have not hesitated to accept my personal responsibility or to record my own position. This I have done directly and through competent representatives. I believe that the underlying grievances of the miners in this district are well founded, and I have urged with all the sincerity and vigor at my command that the present labor policy of the operators, which seems to me to be both unwise and unjust, be radically altered.

"It is my understanding that the operators in the Somerset County coal mines have hitherto denied their employees all voice and share in determining their working conditions and any adequate machinery for the uncovering and adjustment of grievances. The day has passed when such a position can justly be maintained by any employer, or group of employers, in a country like ours. I have long advocated, and never more earnestly than now, a labor policy which concedes to the employees in every industrial unit what I believe to be a fundamental right, namely, the right to representation in the determination of those matters which affect their own interests."

The Committee of City employees appointed by Mayor John F. Hylan to go to Windber to investigate conditions left New York City on Saturday, Oct. 28. The committee is headed by David Hirshfield, Commissioner of Accounts. Before going, James Mark, vice-president of District No. 3, United Mine Workers of America, who was in New York City with the Somerset County miners' delegation, sent a letter to Commissioner Hirshfield in which he said:

"By holding public hearings in Windber you may soon obtain facts of the un-American conditions under which coal for your city subways has been mined and you can form your own conclusions as to whether the citizens of New York really want to profit by the suffering of whole communities of coal diggers. We are frank to express our belief that the results of any fair investigation should lead the New York City government to lay down the following policy for the public utilities partly owned by it:

"That a steady supply of good fuel, mined under American conditions, is possible only where operators and miners have arrived at a union agreement."

Declaring Strike Off in Mingo, Union Prepares to Move Tent Colonies

Officials of the United Mine Workers began preparations Oct. 27 to move hundreds of miners and their families quartered in tent colonies to union coal fields, as a consequence of the official abandonment of the bituminous strike in the Mingo field.

The tent dwellers number approximately one thousand men, women and children, according to R. D. White, international organizer. "We do not intend that these people shall spend a third winter of hardship," said Mr. White.

Decision by union executives to call off the strike was reached at Indianapolis several days ago, it was reported. First announcement was contained in a letter from John L. Lewis, international president, pointing out that the strike has cost the union approximately two million dollars.

During the twenty-eight months of the strike there were thirty known deaths and fifty persons were wounded. Mining equipment destroyed by dynamite and fire was valued at a quarter of a million dollars.

Distribution of Lake Cargo Coal Loaded at Lake Erie Ports to Oct. 15*

Destinations	1922 To Oct. 15 Net Tons	1922 To Oct. 15 Per Cent	1921 To Nov. 1 Net Tons	1921 To Nov. 1 Per Cent	1920 To Nov. 1 Net Tons	1920 To Nov. 1 Per Cent
Lake Superior Ports						
Duluth, Superior and Two Harbors	3,123,390	26.33	8,381,750	40.17	6,213,646	32.46
Ashland-Washburn	277,806	2.34	505,459	2.42	570,485	2.98
Copper Range (1)	347,766	2.93	555,721	2.67	552,305	2.89
Marquette	160,129	1.35	134,029	.64	268,275	1.40
Ft. William, Pt. Arthur and Jackfish	853,576	7.20	1,835,329	8.80	1,663,012	8.69
Other Lake Superior Ports	5,667	.05	37,750	.18	41,669	.22
Totals	4,768,334	40.20	11,450,038	54.88	9,309,392	48.64
Lake Michigan Ports						
Milwaukee-Racine	1,370,565	15.77	2,531,592	12.13	2,239,368	11.70
So. Chicago, Ind. Harbor and Gary	1,130,036	9.53	1,364,506	6.54	1,057,399	5.53
Sheboygan to Escanaba (2)	818,143	7.15	1,436,436	6.89	1,308,334	6.83
Other Lake Mich. Pts.	107,220	.90	214,032	1.02	181,738	.95
Totals	3,955,964	33.35	5,546,566	26.58	4,786,839	25.01
St. Mary's River Pts.						
Detour and Lime Island	459,775	3.87	223,022	1.07	355,834	1.86
Sault Ste. Marie, Can.	148,826	1.26	709,746	3.40	1,030,988	5.39
Sault Ste. Marie, Am.	63,699	.54	87,846	.42	134,251	.71
Totals	672,300	5.67	1,020,614	4.89	1,521,073	7.96
Lake Huron Ports	140,232	1.18	208,683	1.00	185,746	.97
Detroit and St. Clair River Ports	733,874	6.19	961,548	4.60	1,152,852	6.02
Lake Erie Ports						
Buffalo—Fairport and Toledo	964,044	8.13	157,312	.76	38,006	.19
Other Pts. (Regular)	129,656	1.09	78,815	.38	15,467	.08
Totals	1,093,700	9.22	236,127	1.14	53,473	.27
Georgian Bay Ports	347,704	2.93	750,365	3.60	840,741	4.39
Welland Canal, Lake Ont. and St. Lawrence River Pts.	150,405	1.26	690,868	3.31	1,290,911	6.74
Grand Totals	11,862,513	100.00	20,864,809	100.00	19,141,027	100.00

* Compiled by Ore & Coal Exchange, Cleveland; H. M. Griggs, Mgr.
(1) Hancock, Houghton, Hubbell, Lake Linden, Portage and Porch Lake.
(2) Escanaba, Green Bay, Marinette, Menominee, Manitowoc and Sheboygan.

Pittsburgh and Ohio Operators Cut Price of Bituminous for Domestic Use

Reductions in price for domestic sizes of coal produced in certain bituminous districts in Pennsylvania and Ohio are announced in the following statement, issued Oct. 27 by the Federal Fuel Distributor:

"Conferences were held in Pittsburgh on Monday, Oct. 23, between the principal coal operators in the Pittsburgh district, Pennsylvania, the Southern districts of Ohio (which include the so-called Hocking districts), and the Pittsburg No. 8 district, Ohio, and the Federal Fuel Distributor and his assistant, F. R. Wadleigh, to discuss the question of maximum prices f.o.b. at mines on prepared sizes of bituminous coal for interstate shipment for household purposes.

"The operators signified their willingness not to exceed a maximum f.o.b. price at the mines of $4.50 per ton in the Pittsburgh district, Pennsylvania; $4.75 per ton in the Southern districts of Ohio, and $4.25 per ton in the Pittsburgh No. 8 Ohio district, the higher price in the Pittsburgh district, Pa., than in the No. 8 Ohio district being due to the fact that a large proportion of the domestic production in the Pittsburgh district is gas coal, coupled with an alleged greater cost of production, as compared with the production in No. 8 Ohio district.

"The previous prices on interstate shipments of household coal have ranged as high as $6 in the Pittsburgh district, Pa.; $7 in the Southern districts of Ohio, and $5.75 in Pittsburgh No. 8 district, Ohio. It will be noted that the new prices constitute a reduction in the previous maximum figures of $1.50 per ton in the Pittsburgh district, Pennsylvania; $2.25 in the Southern districts of Ohio, and $1.50 in the No. 8 Ohio district.

"These prices were voluntarily established by the operators in the various fields referred to, in recognition of the present emergency and to assist the Federal Fuel Distributor in the accomplishment of the purposes of the act.

"While the representation at the conference was not complete as to each district, so large a percentage of the entire production was represented that we have been assured of uniform observance of these maximum prices."

A group of coal operators representing the producers of northern West Virginia will confer with the Federal Fuel Distributor in Washington on Nov. 2 relative to the price situation in that territory.

Numerous favorable responses have been received by Fuel Distributor Spens as a result of his invitation to Illinois and Indiana coal operators to confer with him in Chicago on Oct. 30 and 31 respectively. At these conferences the matter of prices on Illinois and Indiana coals moving in interstate commerce will be considered.

In view of the lateness of the date at which, due to strike conditions, it was feasible to begin the movement of anthracite to the upper Great Lakes region, it has become evident that it will be necessary to supplement the water transportation of this product by all-rail shipment of hard coal in box cars to the Northwest. With this object in view, a conference of anthracite operators is being arranged, to be held in New York within the next few days. F. R. Wadleigh, assistant to the Federal Fuel Distributor, and Donald D. Conn, of the American Railway Association, will participate in this conference. The program for the movement of anthracite up the Great Lakes, on a basis of 60 per cent pro rata of last year's tonnage would approximate 2,000,000 tons, to move which would have required weekly shipments of about 250,000 tons.

Advices received by Federal Fuel Distributor Spens from St. Paul are to the effect that, with the advent of freezing weather in that general region, very little anthracite is in the dealers' bins. As a result of recent heavy shipments of bituminous coal to the Northwest, the soft-coal situation in that region is much easier, and so far as it is possible to judge by market demands, steam-coal supplies would seem to be assured. The fact that the maximum transportation of anthracite to this region to be expected is 60 per cent of the 1921 tonnage makes it seem inevitable that householders must, to a considerable extent, substitute bituminous lump for the hard coal usually employed for domestic heating purposes.

Illinois Producers Reject $4 Level for Lump

In conference Monday and Tuesday, Oct. 30 and 31, in Chicago with Illinois and Indiana producers the Federal Fuel Distributor asked that a maximum of $4 be adopted for lump, the price of which now is $5@$5.50. Illinois groups would not agree, but will reply soon, possibly making other propositions. Indiana men were in conference as this issue went to press. Producers of both states have many no-bills on track among smaller sizes. Mr. Spens said he realized no prices could be fixed on other than lump.

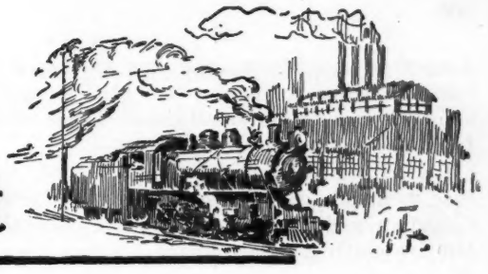
Utah Grand Jury Indicts Coal Profiteers; Recommends Price-Fixing Legislation

The district grand jury which was impaneled Sept. 25 to probe the $1 raise in the price of coal in Utah has brought a true bill against twelve prominent operating companies. Some of them are indicted on two counts. In the report to the court the jury declared the increase in wages following the settlement of the strike did not cost the operators $1 a ton.

The jury said it did not believe the testimony of the operators in which they said they were unable to obtain a fair return on their investment and figures were quoted against the defendants. The jury recommended that legislation be passed empowering the Governor to fix a fair price for coal and making a sale in excess of that price a criminal offense. It was declared that coal is one of the necessities of life and more important as a public utility than gas, telephones, electric lights, street cars and the like, all of which are now controlled by public bodies.

In recommending that the Governor be empowered to fix the price of coal the jury declared the Public Utilities Commission already is overloaded and that this matter should be in the hands of an official directly responsible to the people.

Production and the Market



Weekly Review

The inherent weakness of the bituminous-coal market is indicated by the wide range in prices. Prices of good grades are still firm while on off grades and the output of small mines quotations are low—that is to say, the market is extremely spotty. In a strong market coal is coal, and it all takes the ruling price. Today the range of prices on the product of mines in the same field varies a dollar or more per ton, depending on quality. *Coal Age* Index of spot bituminous prices receded to 346 on Oct. 30—a decline of 6 points for the week. This corresponds to an average mine price of $4.19. The curve of prices, which since reaching the peak of $6.73 the last of July has been falling sharply, is flattening out. The decline appears to have been largely arrested, partly accounted for by seasonal domestic orders, but also due in part to the firm selling tactics of the largest houses. There is a "take it or leave it" note to the sellers' canvassing today—and good grades are not left stranded.

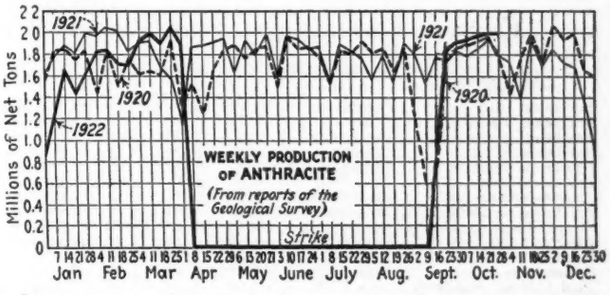
Market Sensitive to Transportation Conditions

The margin of supply in excess of demand is at a point where any sudden dislocation of transportation has an immediate effect on the market. Thus prices at the Cincinnati gateway were markedly stimulated last week by an embargo placed against the westward movement of coal by the Chesapeake & Ohio. Steam prices quickly rallied to the level of gas and byproduct coal, while domestic fuels skyrocketed. Facilities of the L. & N. and N. & W. were pushed to the limit to meet the emergency and congestion appeared at once.

Federal Fuel Administrator Spens has obtained the co-operation of representative Smokeless, Pittsburgh and Ohio operators in holding down their domestic prices. The market range is narrowing down to this level, but slowly, and with intermittent relapses in such emergencies as the Cincinnati occurrence of last week.

Warm weather has cut the Middle West steam market into ribbons. Producers are eagerly taking domestic orders and sacrificing their resultant coals in an effort to maintain production. Competition is so keen in that section that local producers have crowded West Virginia and Kentucky coals from that market. Improvement in rail conditions is slow and not yet indicative of any general betterment.

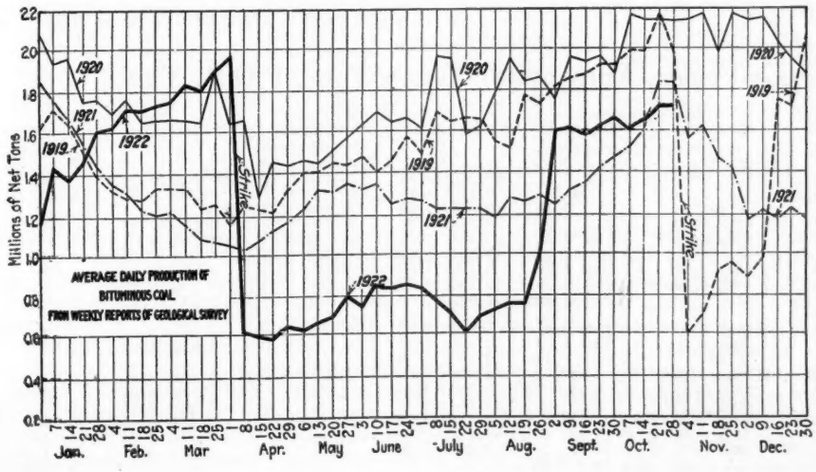
Ohio price regulatory laws are proving a burden to the trade. Coal produced in that state is seeking outside markets and a heavy tonnage is moving to the



Lake and Michigan points. Ohio retailers are forced to buy outside coals at fancy prices. This involves longer hauls and further taxes railroad facilities and car supply.

Heavy shipments to the Northwest have lulled the consumer to a sense of security and dock sales are slow, despite lowered quotations made in the past ten days. Tonnage is piling up at the Head-of-the-Lakes and there is little buying activity shown, aside from a few large consumers who are stocking.

Domestic sizes of anthracite are in great demand and retailers are unable to maintain their yard stocks. The complaint is heard in the East that concentration of tonnage for the Lakes is reducing receipts to the



Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Oct. 7 (*b*)	9,134,000	9,736,000
Oct. 14 (*b*)	9,711,000	10,110,000
Oct. 21 (*a*)	11,049,000	10,365,000
Daily average	1,842,000	1,727,000
Calendar year	325,334,000	301,227,000
Daily av. cal. year	1,312,000	1,211,000

ANTHRACITE

Oct. 7 (*b*)	1,764,000	1,959,000
Oct. 14 (*b*)	1,813,000	2,075,000
Oct. 21 (*a*)	1,910,000	2,003,000
Calendar year	75,089,000	33,215,000

COKE

Oct. 14 (*b*)	94,000	185,000
Oct. 21 (*a*)	102,000	211,000
Calendar year	4,394,000	5,355,000

(*a*) Subject to revision. (*b*) Revised from last report.

danger point. Steam coals are moving a little better but producing companies are still using their mine-storage space for the small sizes. Those without storage facilities are cutting their prices.

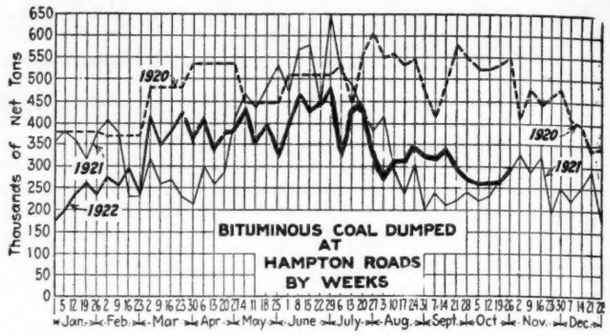
Independent quotations have softened, as dealers refuse to handle coal at the high figures recently quoted. Canadian and Western buyers are clamoring for coal, but are getting little tonnage.

BITUMINOUS

"Preliminary returns on coal production in the fourth week of October indicate a total of 12,500,000 net tons," says the Geological Survey, "of which about 10,400,000 tons is bituminous coal and 2,100,000 is anthracite. Revised estimates for the third week show 10,365,000 tons of bituminous and 2,003,000 tons of anthracite. A slight increase in the total coal raised is thus shown for last week as compared with the week before, which increase is practically entirely in the output of anthracite.

"The number of cars of bituminous coal loaded on Monday, Oct. 16, as reported by the railroads was 43,243 cars, a new high record for the year. On Tuesday loadings declined to 30,724 cars, and by Thursday loadings declined to 28,987 cars. Full returns on loadings for the week are expected to show a total of 190,000 cars and indicate a production of 10,400,000 tons."

Approximately 1,000,000 tons of coal reached the Head-of-the-Lakes during October, of which 90,000 tons was anthracite. If this rate is maintained the season's total will approximate one-half of last year's receipts. An acute shortage of cars is reported by the dock trade. Storage space is rapidly being filled and prices have softened. All-rail tonnage is already an undermining factor in dock prices. Buyers are apathetic and aside from a few large



Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

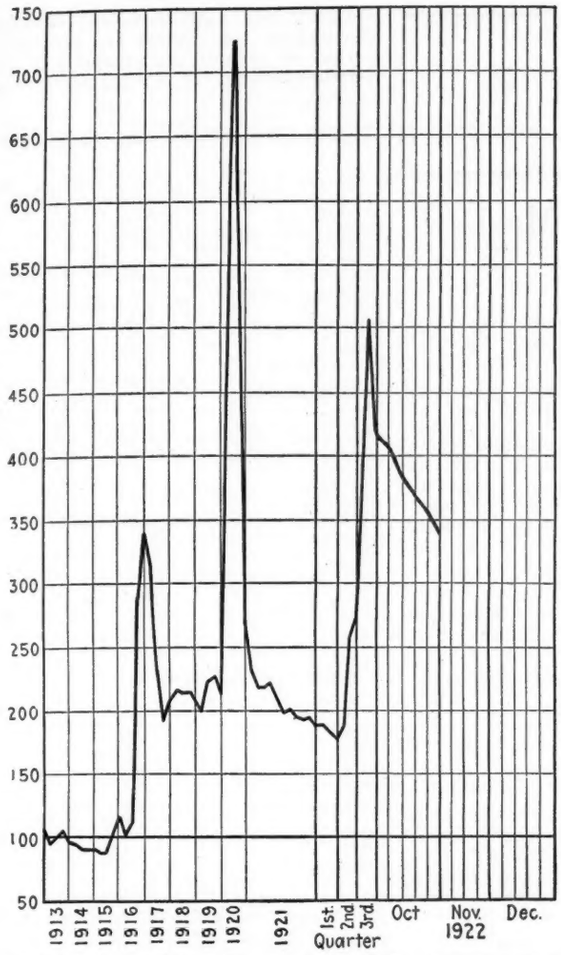
Low-Volatile, Eastern	Market Quoted	Oct. 2, 1922	Oct. 16, 1922	Oct. 23, 1922	Oct. 30, 1922†
Smokeless lump	Columbus	$6.75	$6.75	$7.10	*$6.25@$7.00*
Smokeless mine run	Columbus	5.75	6.00	6.25	6.00@ 6.50
Smokeless screenings	Columbus	5.75	5.50	6.00	*5.50@ 6.25*
Smokeless lump	Chicago	6.35	6.00	6.30	5.75@ 7.00
Smokeless mine run	Chicago	5.85	5.60	6.00	*5.50@ 6.00*
Smokeless lump	Cincinnati	6.30	6.60	6.30	**6.00@ 8.00**
Smokeless mine run	Cincinnati	5.70	5.95	5.55	**6.00@ 6.25**
Smokeless screenings	Cincinnati	5.30	5.80	5.30	**6.00@ 6.25**
*Smokeless mine run	Boston	8.05	7.20	7.10	7.00@ 7.25
Clearfield mine run	Boston	4.50	4.25	3.75	*3.00@ 4.00*
Cambria mine run	Boston	4.75	4.50	4.25	*3.50@ 4.75*
Somerset mine run	Boston	4.60	4.30	3.95	*3.50@ 4.00*
Pool 1 (Navy Standard)	New York	5.50	5.25	5.00	*4.50@ 5.25*
Pool 1 (Navy Standard)	Baltimore	5.75	5.40	5.00	.....
Pool 9 (Super.Low Vol.)	New York	4.85	4.65	4.25	4.00@ 4.50
Pool 9 (Super.Low Vol.)	Philadelphia	4.60	4.35	4.35	*4.00@ 4.65*
Pool 9 (Super.Low Vol.)	Baltimore	5.10	4.60	4.35	*3.75@ 4.25*
Pool 10 (H.Gr.Low Vol.)	New York	4.65	4.10	3.85	*3.25@ 3.75*
Pool 10 (H.Gr.Low Vol.)	Philadelphia	4.25	3.60	3.60	*3.30@ 3.70*
Pool 10 (H.Gr.Low Vol.)	Baltimore	4.75	4.35	3.90	*3.00@ 3.75*
Pool 11 (Low Vol.)	New York	3.85	3.50	3.30	*2.85@ 3.25*
Pool 11 (Low Vol.)	Philadelphia	4.00	3.25	3.25	*2.90@ 3.40*
Pool 11 (Low Vol.)	Baltimore	4.25	4.10	3.55	*3.00@ 3.50*
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	4.15	3.85	3.50	*3.10@ 3.50*
Pool 54-64 (Gas and St.)	Philadelphia	4.25	3.75	3.75	*3.25@ 3.75*
Pool 54-64 (Gas and St.)	Baltimore	4.15	4.05	3.60	*3.25@ 3.50*
Pittsburgh sq'd. (Gas)	Pittsburgh	5.40	5.25	5.05	*4.75@ 5.25*
Pittsburgh mine run (St.)	Pittsburgh	4.25	3.60	3.25	3.00@ 3.50
Pittsburgh slack (Gas)	Pittsburgh	4.00	3.85	3.60	3.50@ 3.75
Kanawha lump	Columbus	6.75	6.25	6.25	6.00@ 6.50
Kanawha mine run	Columbus	5.90	4.50	4.50	**4.50@ 5.00**
Kanawha screenings	Columbus	5.90	3.60	3.75	**4.00@ 4.25**
W. Va. lump	Cincinnati	6.25	6.25	6.10	*6.00*
W. Va. Gas mine run	Cincinnati	....	4.60	4.35	4.25@ 4.50
W. Va. Steam mine run	Cincinnati	....	3.75	3.35	**4.00@ 4.25**
W. Va. screenings	Cincinnati	4.75	4.00	3.65	**3.75@ 4.25**
Hocking lump	Columbus	6.25	5.45	5.25	*4.00@ 5.00*
Hocking mine run	Columbus	4.90	3.50	3.50	**3.50@ 3.75**
Hocking screenings	Columbus	4.50	3.25	3.25	*3.00@ 3.25*
Pitts. No. 8 lump	Cleveland	4.85	3.81	3.81	3.81
Pitts. No. 8 mine run	Cleveland	$4.40	$3.56	$3.56	$3.56
Pitts. No. 8 screenings	Cleveland	4.10	3.31	3.25	**3.31**
Midwest					
Franklin, Ill. lump	Chicago	5.40	5.35	5.30	5.25@ 5.50
Franklin, Ill. mine run	Chicago	4.75	4.50	4.50	*4.00@ 4.25*
Franklin, Ill. screenings	Chicago	3.85	3.25	3.25	*2.25@ 3.00*
Central, Ill. lump	Chicago	5.10	5.10	5.10	*4.75@ 5.25*
Central, Ill. mine run	Chicago	4.55	3.60	3.60	*3.00@ 3.25*
Central, Ill. screenings	Chicago	3.35	2.35	2.00	*1.75@ 2.00*
Ind. 4th Vein lump	Chicago	5.25	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	4.85	4.60	4.35	*3.75@ 4.00*
Ind. 4th Vein screenings	Chicago	3.85	3.25	2.75	*2.25@ 2.50*
Ind. 5th Vein lump	Chicago	5.10	5.10	4.75	4.50@ 5.00
Ind. 5th Vein mine run	Chicago	4.65	3.75	3.75	*3.50@ 3.75*
Ind. 5th Vein screenings	Chicago	3.60	2.85	2.75	*2.00@ 2.25*
Standard lump	St. Louis	4.75	4.25	4.35	*3.50@ 5.00*
Standard mine run	St. Louis	3.75	3.35	2.75	*2.50@ 2.75*
Standard screenings	St. Louis	2.35	2.10	2.10	*2.00*
West Ky. lump	Louisville	5.50	5.05	5.00	4.75@ 5.25
West Ky. mine run	Louisville	3.85	3.00	2.45	**2.65@ 3.00**
West Ky. screenings	Louisville	3.55	2.85	2.10	*1.75@ 2.25*
West Ky. lump	Chicago	4.25	4.10	4.10	4.00@ 4.25
West Ky. mine run	Chicago	4.25	3.50	3.25	*2.75@ 3.50*
South and Southwest					
Big Seam lump	Birmingham	3.75	3.25	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.75	2.75	2.60	2.50@ 2.75
Big Seam (washed)	Birmingham	3.35	3.25	2.75	2.50@ 3.00
S. E. Ky. lump	Chicago	6.25	6.25	5.50	5.00@ 6.00
S. E. Ky. mine run	Chicago	4.75	4.75	4.25	4.00@ 4.50
S. E. Ky. lump	Louisville	7.00	6.75	6.50	**6.50@ 7.00**
S. E. Ky. mine run	Louisville	5.35	4.35	3.85	**3.75@ 4.25**
S. E. Ky. screenings	Louisville	5.10	4.10	4.10	4.00@ 4.20
S. E. Ky. lump	Cincinnati	6.50	6.75	6.75	*5.00@ 6.75*
S. E. Ky. mine run	Cincinnati	5.10	4.10	3.85	**3.75@ 4.75**
S. E. Ky. screenings	Cincinnati	5.00	4.00	3.60	**3.75@ 4.25**
Kansas lump	Kansas City	....	5.75	5.75	5.50@ 6.00
Kansas mine run	Kansas City	....	4.25	3.75	3.50@ 4.00
Kansas screenings	Kansas City	....	2.50	2.50	2.50

*Gross tons, f.o.b. vessel, Hampton Roads.
†Advances over previous week shown in **heavy type**, declines in *italics*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Independent	Pre-Strike Company	Oct. 23, 1922 Independent	Oct. 23, 1922 Company	Oct. 30, 1922† Independent	Oct. 30, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	.....	$7.75@$8.15	.....	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85		7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	$9.25@11.00	7.75@ 8.35	*$9.25@10.50*	7.75@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.75	8.10@ 8.35	9.25@ 9.75	8.10@ 8.35
Egg	Chicago	5.67	7.50*	6.90@ 7.40	10.00@12.00	7.75@ 9.25	.....	.....
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@11.00	8.00@ 8.35	*9.25@10.50*	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Stove	Chicago	5.67	7.75*	7.20@ 7.60*	10.00@12.00	8.00@ 9.25	.....	.....
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@11.00	8.00@ 8.35	*9.25@10.50*	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Chestnut	Chicago	5.67	7.75	7.20@ 7.60*	10.00@12.00	8.00@ 9.25	.....	.....
Range	New York	2.34	.....	.....	.....	8.15	.....	8.15
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.55@ 8.00	6.15@ 6.20	*7.00@ 7.50*	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.25	6.15@ 6.20	7.00@ 7.25	6.15@ 6.20
Pea	Chicago	5.36	6.00	5.60@ 6.10*	8.50@ 9.50	6.15@ 7.00	.....	.....
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.00@ 4.00	4.00@ 4.25	*2.25@ 4.00*	4.00@ 4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.25@ 4.00	4.00	3.25@ 4.00	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	1.85@ 2.50	2.75@ 3.00	**2.00@ 2.50**	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.25@ 2.75	2.75@ 3.00	2.25@ 2.75	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	1.00@ 1.75	2.00	1.00@ 1.75	2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.00@ 2.00	2.00	1.00@ 2.00	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.25	.....	2.25

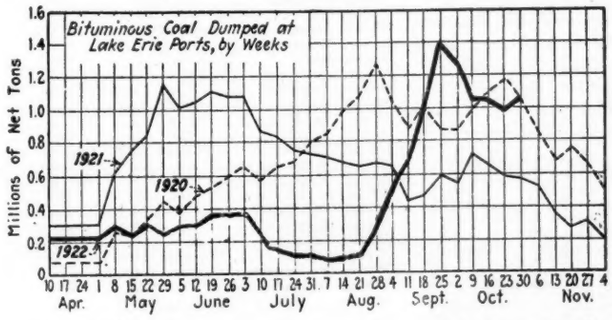
*Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type**, declines in *italics*.



Coal Age, Index 346, Week of Oct. 30, 1922. Average spot price for same period, $4.19. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

consumers who are taking stock the Northwestern market for soft coal is becoming sluggish.

Lake dumpings were 1,011,051 net tons during the week ended Oct. 30, as compared with 1,004,094 tons in the preceding week. The season's movement to date is 14,474,345



tons; last year it was 21,461,460 tons. Of this quantity approximately 1,050,000 tons has been forwarded to parts not ordinarily taking Lake coal.

All-rail shipments to New England declined to 3,092 cars during the week ended Oct. 21, as compared with 3,636 cars in the preceding week. Shippers are finding few takers for their tonnage, although prices have declined steadily.

Hampton Roads dumpings for all accounts were 292,560 net tons during the week ended Oct. 26, as compared with

How the Coal Fields Are Working

Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec., 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Oct. 14, 1922 Inclusive	Week Ended Oct. 14
U. S. Total	45.6	55.7	....	....
Alabama	63.5	64.6	85.2	79.9
Somerset County	55.5	74.9	35.2	31.2
Panhandle, W. Va.	55.3	51.3	59.2	50.5
Westmoreland	54.9	58.8	72.7	63.1
Virginia	54.8	59.9	57.6	61.2
Harlan	53.3	54.8	21.6	26.6
Hazard	51.7	58.4	13.6	13.5
Pocahontas	49.8	60.0	35.2	43.5
Tug River	48.1	63.7	33.1	36.1
Logan	47.6	61.1	24.1	22.0
Cumberland-Piedmont	46.6	50.6	32.0	35.1
Winding Gulf	45.7	64.3	30.3	28.4
Kenova-Thacker	38.2	54.3	40.1	34.7
N. E. Kentucky	32.9	47.7	32.0	33.6
New River	24.3	37.9	30.5	29.4
Oklahoma	63.9	59.6	63.2	75.0
Iowa	57.4	78.4	80.0	80.6
Ohio, Eastern	52.6	46.6	46.8	43.2
Missouri	50.7	66.8	67.9	80.0
Illinois	44.8	54.5	47.8	46.4
Kansas	42.0	54.9	62.9	57.8
Indiana	41.4	53.8	(a)	(a)
Pittsburgh†	41.2	39.8	50.6	43.7
Central Pennsylvania	39.1	50.2	62.8	59.2
Fairmont	35.3	44.0	43.0	30.1
Western Kentucky	32.5	37.7	30.5	32.7
Pittsburgh*	30.4	31.9	61.0	51.6
Kanawha	26.0	13.0	14.2	17.8
Ohio, Southern	22.9	24.3	(a)	(a)

* Rail and river mines combined.
† Rail mines.
(a) No report.

Car Loadings, Surplusages and Shortages

	Cars Loaded All Cars	Coal Cars
Week ended Oct. 14, 1922	983,470	196,926
Previous week	968,169	189,312
Same week in 1921	910,529	195,547

	Surplus Cars All Cars	Coal Cars	Car Shortage	
Oct. 15, 1922	4,275	1,588	156,309	44,984
Oct. 8, 1922	5,500	3,024	141,252	40,499
Same date in 1921	120,000	62,000	.....	.....

260,358 tons in the previous week. The Sewalls Point piers registered an increase, while the Norfolk & Western tonnage dropped. There is less coal on hand, although it is likely that the Chesapeake & Ohio embargo on westbound movement will throw more tonnage to Tidewater. Coastwise business is still the mainstay of the Roads, and the low prices prevailing afford Southern fuels an excellent competitive position in New England with all-rail grades. There is little activity in that market, however, aside from contract movement.

ANTHRACITE

Estimates of production of hard coal for the week ended Oct. 28 place the output at 2,100,000 net tons, as compared with 2,003,000 tons during the preceding week.

Domestic coal is moving out to householders as rapidly as it is received by retailers. Canada and the West are clamoring for coal—and receiving but little. Lake movement is being pushed during the short remainder of navigable weather this season. This has caused a diminution of receipts at Eastern points and while there is no actual suffering, federal authorities are understood to have been requested to increase the allotments for New York State. Rail deliveries to New England were 3,477 cars during the week ended Oct. 21, as compared with 3,226 cars in the preceding week.

COKE

Production of beehive coke was 211,000 net tons during the week ended Oct. 21, an increase of 26,000 tons when compared with the preceding week. The largest increase occurred in the Connellsville region.

Contract offerings are higher than spot prices, in view of transportation difficulties to be expected later. With increasing output the market hinges on the position of the consumer, whose outlook, while not poor, is uncertain. The market for pig iron is sluggish. With increasing production it is no longer a question of obtaining sufficient coke and some furnaces may have to blow out because of a lack of market.

Foreign Market And Export News

Good Export Demand Aids British Market; Production Sets New High

The prospects of the Welsh coal trade are still bright, the only fly in the ointment being the threat of a strike on the non-unionist controversy. It is believed that the Miners' Federation will decide to postpone the threatened strike. The export trade continues strong, especially to South America, Europe and Mediterranean coaling depots; on the other hand, exports to the U. S. and Canada have declined from around 200,000 to 60,000 tons per week.

The chief market is found in steam coals which are going to Germany, France and Italy. These countries, it will be remembered, first held their orders for a fall in prices, then were crowded off the market by American orders, and so their requirements now are heavy.

British production during the week ended Oct. 14 set a new record for the year when a total of 5,255,000 gross tons was mined, according to a cable to *Coal Age*. The preceding week's output was 5,209,000 tons.

The situation in North England enables sellers to hold for advances on current quotations. The perennial labor uncertainty in Wales has greatly helped Northumberland and Durham and there is a strong demand for practically all classes of coal.

French Coal in Better Demand

Nord and Pas-de-Calais coals remain very active; orders are easily absorbing the production and small tonnages are being taken from stocks. The demand for domestic, stirred up by the difficulty of procuring Belgian coals, has become pressing and delays of delivery of two or three weeks are common.

Welsh machine-made anthracite nuts are selling now on the basis of 80s. c.i.f. Rouen, or 232 fr. and are retailed to Parisian households at prices varying between 360fr.@380fr. The excess of this price had induced consumers to purchase Belgian anthracites instead, which are now almost unobtainable.

In the Center fields, stocks of industrial coals are still large, but those of domestic coals are rapidly decreasing. Nevertheless, a certain improvement in the industrial demand in that district also begins now to be felt.

Although French operators of the Nord and Pas-de-Calais have agreed not to press for the present their former decision to reduce wages, they are determined to obtain from Parliament the amendment to the Mines Act, which would increase the underground working time. Miners are no less opposed to any modification of the Act.

Hampton Roads Export Clearances, Week Ended Oct. 26, 1922

Nor. SS. Jose, Kingston, 1,181 tons.
Br. SS. Berwindvale, Havana, 7,814 tons.
Amer. Schr. James M. W. Hall, Hamilton, 858 tons.
Amer. Schr. Grand Turk, Hamilton, 758 tons
Amer. SS. Cristobal, Cristobal, 9,485 tons.

Hampton Roads Pier Situation

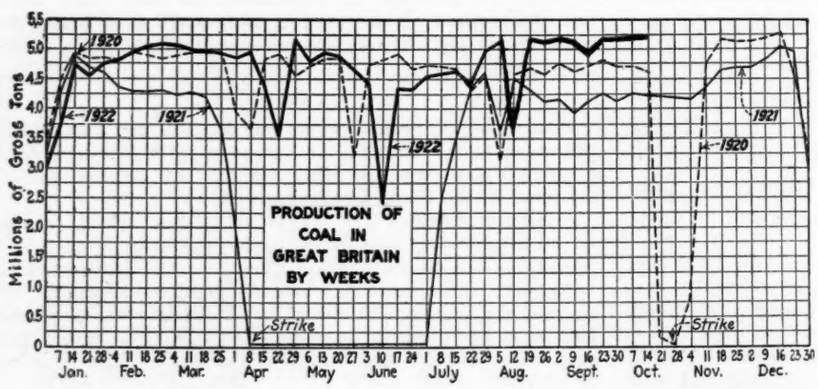
	Week Ended Oct. 19	Week Ended Oct. 26
N. & W. Piers, Lamberts Point:		
Cars on hand	1,208	937
Tons on hand	85,084	60,322
Tons dumped	104,906	96,335
Tonnage waiting	3,050	13,875
Virginian Ry. Piers, Sewalls Point:		
Cars on hand	1,099	725
Tons on hand	68,400	46,650
Tons dumped	73,776	110,823
Tonnage waiting	13,684	7,149
C. & O. Piers, Newport News:		
Cars on hand	566	348
Tons on hand	28,800	17,400
Tons dumped	53,781	54,057
Tonnage waiting	450	250

Coal Paragraphs from Foreign Lands

GERMANY—Production in the Ruhr region during the week ended Oct. 14 was 1,972,000 metric tons, according to a cable to *Coal Age*, as compared with 1,855,000 tons in the week preceding.

ITALY—Genoa quotations on Cardiff steam first are now around 40s. 6d., according to a cable to *Coal Age*. Last week's price was 39s. 6d.

BELGIUM—The market is becoming very firm and orders are of extraordinary size. After a year of crises the Belgian coal basins are enjoying a period of exceptional prosperity. The foreign demand for classed descriptions is growing.



British Coal Exports in September

Country	Gross Tons 1920	1921	1922
Russia	12,089	14,810	83,152
Sweden	53,843	215,884	229,276
Norway	39,217	91,521	132,198
Denmark	66,410	226,393	351,387
Germany	1,916	161,530	1,060,801
Netherlands	16,528	247,582	611,147
Belgium	19,154	80,727	276,390
France	532,919	846,085	1,108,927
Portugal	15,518	86,250	65,483
Azores and Madeira	19,908	2,911	5,035
Spain	5,838	110,854	142,710
Canary Islands	39,089	34,149	42,431
Italy	164,456	400,991	538,002
Austria-Hungary	2,665	.....	.....
Greece	15,466	65,737	44,066
Algeria	73,136	38,184	91,395
French West Africa	2,260	2,818	1,934
Portuguese W. Africa	32,176	21,544	.....
Chile	90	103	12,448
Brazil	.....	47,741	130,311
Uruguay	8,157	41,895	26,509
Argentine Republic	5,528	103,053	143,387
Channel Islands	13,280	9,309	11,968
Gibraltar	130,535	60,363	31,109
Malta	31,380	39,473	17,586
Egypt	118,952	87,488	195,521
Aden and Depend	.....	16,495	7,645
British India	235	103,060	27,998
Ceylon	5,151	28,055	9,770
Other countries	44,718	221,574	1,684,143
Total September	1,475,623	3,406,579	7,082,729
Total August	1,847,403	3,103,207	6,146,121

QUANTITY AND VALUE

	Gross Tons September	1st 9 Mos.
1920	1,475,623	19,851,555
1921	3,406,579	13,351,554
1922	7,082,729	45,476,573
	Value September	1st 9 Mos.
1920	£6,622,515	£78,492,476
1921	5,194,356	27,856,159
1922	8,110,083	51,410,935

Pier and Bunker Prices, Gross Tons

PIERS

	Oct. 21	Oct. 28†
Pool 9, New York	$8.00@$8.25	*$7.50@$7.75*
Pool 10, New York	7.35@ 7.60	*6.85@ 7.15*
Pool 11, New York	7.00@ 7.25	*6.50@ 6.75*
Pool 10, Philadelphia	7.25@ 7.75	*7.15@ 7.65*
Pool 11, Philadelphia	7.00@ 7.50	*6.90@ 7.35*
Pool 1, Hamp. Roads	7.00	*6.85@ 7.00*
Pools 5-6-7 Hamp.Rds.	6.75	6.75
Pool 2, Hamp. Rds.	7.00	*6.85@ 7.00*

BUNKERS

Pool 9, New York	$8.35@$8.60	*$7.85@$8.15*
Pool 10, New York	7.70@ 7.95	*7.20@ 7.50*
Pool 11, New York	7.35@ 7.50	*6.85@ 7.10*
Pool 10, Philadelphia	7.75@ 8.25	*7.65@ 8.15*
Pool 11, Philadelphia	7.50@ 8.00	*7.40@ 7.90*
Pool 1, Hamp. Rds	7.10	*6.85@ 7.00*
Pool 2, Hamp. Rds	7.10	*6.85@ 7.00*
Welsh, Gibraltar	40s. f.o.b.	*38s.* f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	50s. f.o.b.	*37s.* f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	42s. t.i.b.	*41s.* t.i.b.
Welsh, Algiers	41s. 6d. f.o.b.	*38s.* f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	65s. f.o.b.	*64s.* f.o.b.
Welsh, Madeira	45s. 6d. f.a.s.	*42s.* 6d. f.a.s.
Welsh, Teneriffe	43s. 6d. f.a.s.	*38s.* 6d. f.a.s.
Welsh, Malta	42s. 6d. f.o.b	*41s.* f.o.b.
Welsh, Las Palmas	43s. 6d. f.a.s.	*38s.* 6d. f.a.s.
Welsh, Naples	42s. f.o.b.	*41s.* f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. t.i.b.	52s. 6d. t.i.b.
Welsh, Constantinople	50s. f.o.b.	52s. 6d. f.o.b.
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	51s. 6d. f.o.b	*49s.* f.o.b.
Welsh, Oran	40s. f.o.b.	*38s.* f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	46s. 6d. f.o.b.	*42s.* 6d. f.o.b.
Welsh, St. Vincent	46s. f.a.s.	*42s.* f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Oct. 21	Oct 28†
Admiralty, large	27s.6d @28s.	27s.6d.@28s.6d.
Steam, smalls	16s.@16s.6d.	16s.@16s.6d.
Newcastle:		
Best steams	27s.	27s.
Best gas	24s.@25s.	24s. @ 25s.
Best bunkers	23s.6d.	23s. 6d.

North Atlantic

Receipts Overabundant; Market Conditions Muddled

Higher Grades Well Sold Up—Prices Easy on Other Qualities—Heavy Users Active, Average Consumer Still "Lying in Wait."

Prices are easy, except on the higher grades, which are not in oversupply. Receipts are still more than adequate, but the consumer insists on quality coal, with the result that good fuel is well sold up. The market is badly muddled and a wide range of prices is quoted, especially for medium- and low-grade fuels. Heavy users are the most active and are still the saving feature in the situation, as the average consumer remains on a hand-to-mouth basis.

British coal receipts are diminishing, but some heavy consignments still seek an outlet. Southern coals are coming forward in good volume, but only on order.

NEW YORK

Demand was spasmodic toward the end of the week. Quotations changed as frequently as the temperature and cool weather caused a slight stiffening. The general trend indicated little change from the previous week, although quotations in some instances were lower and the range wider.

The tendency of buyers to stay out of the market continues but most dealers look for considerable activity the early part of November. One feature of the market was the apparent unwillingness of some operators to book orders although given the order at the quotation they had made. While this action may have been due to heavy orders already booked or otherwise no reason was given to the middle houses offering the orders.

Receipts of British coal are growing less each week, but it is said there is considerable here still unsold. Southern coals are coming in good volume and on order.

There were upward of 1,500 cars at the various piers on Oct. 27 with no large surplus of the better grades. Boat rates in the local harbor are stronger, due to the many boats loaded with anthracite steam coals.

PHILADELPHIA

The situation continues to be badly muddled on account of the average consumer's attitude toward ordering. On the other hand there are actually instances of consumers who are short of coal and have come into the market in great haste to replenish supplies. Often these are users of the highest grade coals and they have not been plentiful at any time. Car supply is still a severe handicap on production, but there are some signs of improvement.

The users of heavy tonnages are still in the market and are really the saving factor in the situation. The producer is still inclined to criticize the ordinary consumer, because in the shortage that all feel sure is to come before midwinter, with the consequent upward bound of prices, it is the man without coal who cries the loudest, yet is short of coal on account of his own shortsightedness.

Each week seems to turn up consumers who have adopted oil as a fuel, wholly or partially, although the installations to date are not sufficient to make any impression upon coal consumption.

Prices have eased off a bit, and the slight firmness evident ten days ago, has vanished. High-grade coals continue to lose the least ground, as the most of this tonnage is applied on contracts and very little reaches the spot market. Recently some cheap offerings have been made, likely the output of wagon mines.

BALTIMORE

Bituminous coal demand is weak and prices have softened further. Consumers are buying on a current basis only although some of the large users are continuing to take advantage of the ruling prices and are putting in reserves.

Pools 9 and 71 are quoted $3.75@$4.25, net mines; Pools 10 and 11 are $3@$3.75; Pool 64, $3.25@$3.50, and Pool 63 is $3.50@$3.75.

Car supply is very short and deliveries slow and uncertain. Despite this, however, sufficient coal is being received to meet all spot demands. Good grades move the easiest; lower-quality coals are often in distress on the present sluggish market.

FAIRMONT

Operations are limited to about one or two days a week and many mines are unable to operate even that much. Some are forced to go without loading equipment for more than a week at a time owing to the general practice of the roads in assigning cars for railroad fuel loading. There has been little or no change in the market situation. The prevailing price on steam mine run for Western delivery is $3.75. In Eastern markets it ranges $3@3.50.

UPPER POTOMAC

Managing to secure a more regular supply of empties, plants in the Upper Potomac are operating with less interruption than is the case elsewhere in the state. Production is on a smaller scale in the Georges Creek region, not because of a shortage of cars but because of the fact that the strike trouble has not been entirely eliminated. There is still lack of pronounced activity in buying in the East although mines are not falling behind any on that account.

CENTRAL PENNSYLVANIA

Prices show a further decline. Prices to local consumers in the district are due for a drop because of an order issued by the I.C.C., effective Oct. 25, which does not permit the placing of open-tops or hoppers on sidings for operators unless they can be loaded within 24 hours. This order will force many wagon mines out of the market as many of them cannot load a car within the specified time.

Pool 18 is now quoted $3@$3.25, f.o.b. mines. Pool 10 ranges $3.75@$4.

West

KANSAS CITY

Snappy temperature stimulated the demand for domestic coal and dealers are rushed to take care of orders. The demand was also aided by orders from customers who changed to oil-burning equipment that failed to perform as provided and who went back to coal.

Demand for steam coal is holding up and all are being supplied. Aside from delay in transportation the coal business in this section is in a more active condition than for some time.

Prices are too low to yield any revenue to either the operator or retail dealer. At the same time the public is kicking about the price being too high. The strike put a lot of new coal operators in business. Most of them run small mines, and as they keep no cash accounts, they will not know that they are broke until they run out of money to meet their payroll.

SALT LAKE CITY

Mines are working on an average of less than three days a week. Car shortage is steadily growing worse and the market is also weak. The coast trade is falling off, while the demand from neighboring states is very slight compared with what it was. The ideal weather which prevails, together with the reopening of the Wyoming mines, is largely responsible for this.

Salt Lake City yards have about 15,000 tons now, which is less than in former years. Consumers have been waiting for the Grand Jury to finish its investigation of high prices. Now that it recommends price fixing by the governor, they will no doubt wait for that though lump is in better call already. The demand for slack is weaker.

DENVER

Instead of cars being delivered to Colorado mines enabling them to work on a percentage basis of from two to three hours a day, the Union Pacific on Oct. 23 started distributing cars to a certain number of mines all day and the balance of the mines the next day. This enables the operators to reduce the cost of production during the car shortage.

Business on first-grade lignite is practically at a standstill as most of the dealers are buying second-grade lump at $3 per ton. First grade is quoted at $4.90. Many Denver operators are getting inquiries from Omaha dealers for quotations on lignite slack. This would indicate from this point that there is an unusual shortage in the supply of cars in Illinois and Iowa.

Anthracite

Domestic Business Brisk; Receipts in East Lower

Retailers Hard Put to Maintain Yard Supplies—Efforts Bent to Get Coal to Northwest—New York May Ask Increased Allotment.

Domestic business is very active and retailers are unable to maintain their yard supplies. Eastern centers complain of diminished receipts, which probably will be the case until the close of Lake navigation, as every effort is now being made to send coal to the Northwest in the few remaining weeks of the season. Canadian buyers are unable to place orders for a satisfactory tonnage except at high premiums.

So much of the coal received at New York terminals is transshipped to New England that there is a rumor that the federal authorities will be requested to increase the allotment for that state. Steam business has been aided by the cool weather, but mine-storage space is still being utilized.

PHILADELPHIA

Meager receipts have increased the seriousness of the situation. Dealers are being heavily pressed for fuel, and it is necessary to ask the buyer to take what is on hand.

The shippers, especially the companies, have but the one answer for the short shipments, that being the movement to the North and to the Lakes, before winter sets in. This year, on account of no summer shipments, dealers are inclined to criticize the action of the shippers. The outlook cannot be said to be promising.

There is some tendency to a strengthening of retail prices. While most sales are being made $14.50, those dealers who had been inclined to waive the carrying charge are now more particular.

Steam sales have not improved, with companies still making use of their storage yards to a limited degree, and the other shippers selling some coal off price.

BUFFALO

Demand is of course heavy, but it is not as insistent as it sometimes has been. Distributors still say they cannot keep up with the orders that come in from people who have no coal.

Canadian dealers despair of getting anything like a supply. One of them states that he usually sold eighty cars a year, but so far he had received only one and he thought he would do well to get twenty before spring.

Lake shipments for last week were 120,500 tons, of which 61,700 were for Duluth and Superior, 6,200 for Port Arthur and 6,800 for Marquette, on Lake Superior and 20,400 for Chicago, 14,900 for Milwaukee, 7,800 for Sheboygan and 2,700 for Racine on Lake Michigan.

BOSTON

While certain of the originating companies are making good deliveries by water, the all-rail route seems to be pretty well gummed up with the shortage of motive power. On the New Haven R.R. it is taking three and four weeks for cars to come through, and in parts of the anthracite region there is genuine alarm over car supply.

Most of the Boston retail dealers marked up prices on Oct. 24 from $15 to $16 per net ton delivered. A few of the larger distributors have not yet advanced.

BALTIMORE

Domestic supply is very short. Receipts average about 4,000 tons daily and dealers are unable to supply more than a portion of the demand.

Many householders are without fuel, as they have declined to purchase the soft-coal substitutes recommended by the Maryland Fuel Distribution Committee. The feeling has prevailed that last-minute supplies of anthracite would be available, but now that colder weather is at hand, a better distribution of these bituminous substitutes is anticipated.

NEW YORK

While the Metropolitan District may to all appearances be receiving its share of domestic sizes, it is rumored that appeals will be made to the Federal Fuel Administration in Washington to increase its allotment. Consumers, while not yet suffering from a lack of fuel are becoming anxious, especially those who so far have not been able to get even the 30 days supply allowed by the New York State Fuel Administrator.

Some of the independents and their sales agents are refusing to take orders unless it is understood that shipments cannot be expected inside of at least three weeks. Demand from the West and Lake ports, as well as New England, remains heavy and efforts are being made to get as much coal as possible into those sections before winter sets in.

Retail dealers are taking comparatively little of the high-priced individual coal. Some of the smaller operators are asking around $12, but the largest independents are quoting $9.25 @$10.50.

The steam coal situation is easier. Storing continues but there is a heavier consumption because of the cool weather. A heavy tonnage is also being taken by retail dealers who in doing so are able to secure shipments of the larger coals.

British coal is being featured as a substitute for anthracite. The Consolidated Coal Importers, Inc., is offering "dry semi-anthracite Welsh coal" in the New York market at $14.50 per net ton, delivered to consumers, and advertising for salesmen to handle this fuel at a "liberal commission."

Coke

UNIONTOWN

The coal market appears to have touched rock bottom with the $3 figure which has been prevailing for several weeks. Demand continues uncertain but operators have successfully resisted any further price lowering.

A distinct development of the week was the I. C. C. order which closes the transportation lines to wagon mines. The order denies open-top cars to wagon mines until tipple mines have been given maximum placements.

The coke market continues a bit slippery but its softened condition has not yet reacted against production. There is, however, a firm resistance to prices.

Indications are that contracting for coke tonnage will be resumed again Jan. 1 after suspension of practically a year. At the opening of last year contracts generally were made for only three months owing to the contemplated strike April 1. There were no further contracts during the year when production was interrupted and recovery from the strike was too late to permit last quarter contracts.

CONNELLSVILLE

Connellsville furnace coke, after breaking from $12 to $8 in less than a fortnight, has merely weakened a trifle in the past week. The first sign of weakening naturally took buyers out of the market, while the sharp price decline seems to have brought them in again.

Odd lots can usually be picked up at $7.50, but a good-sized tonnage, particularly if distributed over a week or two in point of shipment, would probably command $8 without much difficulty. So far as concerns the views of operators, an important point is that with prompt coke at not over $8 operators are quoting $9 on contracts running to the end of the year. Their explanation is that there is likely to be a fresh and additional car shortage in December, which would advance the prompt market.

With the steadiness in increased production, it is plain that the future prices depend chiefly upon the position of consumers, whose outlook may not be poor, but is plainly uncertain. There is very fair production of merchant pig iron now, and while recently the whole situation appeared to be simply one of each furnace getting into blast as soon as it could secure coke, it is now not certain but that some of the furnaces may have occasion to blow out.

The *Courier* reports production during the week ended Oct. 21 at 101,310 tons by the furnace ovens and 45,410 tons by the merchant ovens, a total of 146,720 tons, an increase of 6,010 tons.

BUFFALO

Some of the local byproducts are crowding their ovens past the needs of their furnaces and selling the surplus for domestic use at about $12 for furnace grade. Consumers feel that all coke is held too high, and so do not buy except as a necessity.

Chicago and Midwest

Market Weakness Spreads Into Bigger Sizes Also

Hold-Out of Steam Buyers Lowers Steam, Egg and Some Mine Run, with Screenings—Domestic Firmness Stays —Car Service Unimproved.

Continued summer weather during the past week in this region conspired shamelessly with the big steam buyers to keep the market in most centers of the Middle West low and uninteresting. Even domestic demand, while good, is not rushing, and the difficulty which many producers found in disposing of everything but lump drove them to lower quotations on steam egg and mine run as well as screenings, which have been sliding for weeks. Competition between fields of Illinois and Indiana for skimpy markets is having the inevitable effect and little coal from outside is getting into the Middle Western states.

Kentucky is less afflicted by these conditions because its own local markets are a bit stronger and the call from the Lakes continues good enough to absorb much of the slim production permitted by a 20 to 30 per cent car supply. Gas and by-product coals have dropped some, however. The railroad service of the whole Middle West is about what it was a week ago.

CHICAGO

"The world's greatest coal market" continues to drone along without much excitement. Almost all domestic sizes are in good demand with no noticeable softening in prices. The standard quotation on southern Illinois lump remains at $5.50 and at $4.75@$5.25 on lump from central and northern Illinois and the best districts of Indiana. There is no mad rush on, however. Small quantities of anthracite and smokeless dribble in, but here again there is no crush at the retail coal man's door. The smokeless even shows signs of weakening a little from $6@$7.

Steam buyers, having already lowered the levels of screenings week by week by staying out of the market, have effected further reductions from several fields so that the best southern Illinois screenings today are down to $2.50 and even to $2.25 in some instances. The same sizes from other Illinois fields remain below $2. Steam egg and mine run has weakened here and there also, for there is no class of consumers for these coals that is laying in supplies. Competition between Indiana and Illinois producers grows keener with reports of many price concessions on almost everything under 6-in. lump. Not much Kentucky coal reaches this far north for the market is saturated now and nearby fields have got prices down low enough to discourage outsiders.

The retail market is worried by the Pottinger-Flynn yards offering coal "at cost" through the medium of coupons in a local newspaper. This concern has been accused, before a grand jury, of selling coal unfairly to the city schools. The company is now busy staving off a jail sentence imposed upon its auditor for refusal to produce certain company books.

WESTERN KENTUCKY

While some of the operators are kicking about the buyers' strike, as a matter of fact production is as heavy as car supply will permit, but prices are not what the operators would like to see them. The Illinois Central is supplying about 34 per cent of the normal number of cars and the L. & N. 20 to 25 per cent.

Steam coal is a little stronger due to cooler weather and development of small steam plant demand for heating use along with better demand for mine run from domestic consumers. Screenings are $1.75@$2.25, including pea and slack as well as nut and slack. Mine run is stiffer at $2.75@$3, but is perhaps shaded a little under that price, although some houses are quoting as high as $3.25. Lump is quoted from $4.75 for poorer grades to $5.50, but not much coal moves at the top price.

ST. LOUIS

Warm weather has brought an easy market with everything in surplus. Even Carterville seems to be plentiful and the dealers are not buying for storage. The public seems to have a feeling that coal will soon come down and are buying only in small lots and this feeling is conveyed to the dealer, who is not putting much coal in storage.

The public seem to think that the retail price of $9.50 on Carterville as against the next lower grade, which is Mt. Olive, at $7.50, is too much and the demand is for Mt. Olive. Standard at $6.75 is not popular. A few cars of anthracite are moving in, but no smokeless and nothing from Arkansas. Country domestic is also quiet and the call is principally for the cheaper coals.

Locally steam is easy. Large users are not buying beyond actual requirements, and this is true to a great extent of country business. Railroad tonnage is light on account of restrictions against certain roads which are practically embargoes and transportation west of the river is far from being good. Colder weather is the one hope for any improvement.

LOUISVILLE

While prices are a little stiffer on general steam coals this week demand for gas and byproduct has slumped somewhat, and gas coals are selling at about the non-gas price except on mine run straight steam coal which is quoted as low as $4 for eastern Kentucky, while the gas coal is quoted at $4.25@$4.50. Lump is firm at $6.50@$7, while screenings are commanding the mine run price, because of small production and steady demand from consumers who use automatic stokers.

It is reported that there is better buying from eastern Kentucky for railroads in Ohio and the North. While the market is firmer, it is not materially stronger. It is reported that there is not much coal on tracks, and with car supply between 20 and 30 per cent, production continues small. Some movement is going South, to the textile districts which are busy. Lake movement continues fair.

Western Kentucky prices are quite firm in the local market, at $4.75@$5.25 quoted, with some lump at $5.50; mine run is $2.75@$3, and screenings, $1.75 @$2.25. Most western Kentucky coal is moving either South or to Louisville, but production is low due to a car supply of from 20 to 34 per cent on the various lines.

Industrial lines are active and plants are busy, and apparently consuming fuel, but even with present small production there appears to be no shortage.

SOUTHERN ILLINOIS

The warm weather has put a crimp in business as far as smaller sizes of coal are concerned in the Carterville field. This has also affected the nut size, which is becoming almost as topheavy as screenings. There are no-billed screenings and nut at many mines and screenings have dropped to $2 while nut is quoted as low as $4.

The average car supply throughout the field is three days at mines having two or more connections, while it runs from 1½ to 2 days at mines with only one connection. Railroad tonnage is light and the bulk of the movement seems to be North and Northwest. In the Duquoin and Jackson County field conditions are similar.

In the Mt. Olive district steam sizes are causing idleness. Railroad tonnage is good and up until the last few days domestic movement has been fair but the hopper-bottom equipment and the warm weather put a quietness on the movement of domestic, especially to the St. Louis market.

In the Standard district conditions are beginning to look bad. Steam sizes are heavy and many mines are carrying "no-bills." Embargoes on the lines west of the river have caused some trouble, but, generally speaking, there is no demand for steam coal and right now the domestic business is easing up. Railroad tonnage is fair. Car supply both in the Mt. Olive and Standard districts average 3 days a week.

INDIANAPOLIS

There has been little change in the Indiana markets. Jobbers, operators and retailers all unite in the assertion that demand is light. From the retailer's viewpoint the warm weather is undesirable. The jobbers say there is no stocking demand for steam coal from industries. Prices show no change, but there has been a little weaker tendency in some of the grades.

There is a hue and cry from all sections of the state for cheaper coal. Many factory executives say they will further curtail production unless there is some concession made. Utilities are buying from hand to mouth and are beginning to demand permission to raise rates.

Eastern Inland

Meager Spot Offerings Absorbed at Firm Prices

Marketing Orderly, Dependent on Car Supply—Domestic Market Active—Steam Trade Improves—Conditions Muddled in Ohio—Lake Loading More Difficult.

Current production is being marketed in an orderly manner, regulated by the short car supply. Prices are firm, demand being sufficient to absorb the meager spot offerings. The domestic market is very active and there is a little more life to the steam trade.

Ohio's price-fixing regulations have caused a serious domestic situation in that state. Ohio-mined coals are seeking other markets and retailers thus are forced to buy coals produced in "foreign" states and at high prices. The longer rail haul involved is further taxing poor transportation conditions and shortening the car supply. Loadings at Lake ports were hampered by last week's weather conditions.

CLEVELAND

One direct consequence of the fuel control and price fixing in Ohio has been a steady flow of Ohio-mined coal out of the state. Retailers from other states declare they are buying quantities of Ohio coal at $5.50@$6. That explains why Ohio dealers can get little good Ohio coal at the rates of $3.81@$5.11 for prepared sizes, as fixed by the Ohio Fuel Administrator. As a result Ohio retailers are compelled to buy much of their fuel outside of the state.

Dealers are complaining that the margin of $2.75 a ton allowed in Cleveland is too low to enable them to do business. They assert that the cost of handling all grades of coal was $3.37 a ton during September, as compared with $2.55 in 1921, when labor was more plentiful.

Demand in this district is somewhat better. Householders are buying more and there is a somewhat better call from industrial users. The latter, however, are still buying on a hand-to-mouth basis.

The Lake movement continues around 1,000,000 tons weekly. Shipments for the season up to Oct. 23 were 12,855,130 tons compared with 20,197,103 tons for the same period of 1921 and 18,549,344 tons in 1920.

COLUMBUS

A tendency toward stronger prices on prepared sizes and a softening influence on mine run and screenings are the chief features of the Ohio coal trade. Hocking and Pomeroy grades are selling $5.50@$6. Practically none of this coal is coming to Ohio dealers because of the price fixing which is causing operators to seek a market outside of the state. Efforts on the part of the Ohio and federal fuel administrators to get together on Ohio prices have not been successful so far.

Steam grades are weakening because of a larger tonnage of mine run thrown on the market. Some of the commercial users are stocking up to a limited degree but most of the purchases are for current needs.

The Lake trade is going along fairly well and some few additional contracts have been made. A fair tonnage is being moved and it is believed there will be no fuel shortage in the Northwest especially in view of the all-rail shipments which will continue during the winter.

DETROIT

Although receipts are heavier neither the steam users nor retail dealers are displaying much interest in the matter of adding to their stocks. Orders are coming irregularly and the business handled is largely on a hand-to-mouth basis. Buyers apparently are persisting in the waiting policy which has been a strong characteristic of the local market since midsummer.

Most of the coal which is now being sent to Detroit comes from mines in Ohio. The supply of West Virginia and Kentucky coal is limited by the facilities of transportation lines serving those sections.

Hocking lump and egg is quoted at $5.50@$6; mine run is $3.75@$4; nut, pea and slack, $3.25@$3.50. Fairmont ¾-in. is $5; mine run, $4.50@$4.75; slack, $4.50. Pittsburgh No. 8 ¾-in. is $5; mine run, $4@$4.25; slack, $3@$3.75. West Virginia and Kentucky lump and egg is $6@$6.25; mine run, $4.75; slack, $4.50@$4.75. Smokeless lump and egg is around $8, with mine run, $6@$6.75.

Receipts of anthracite continue far short of requirements. Retail dealers are refusing to make purchases from independents who quote $12 as the mine price.

EASTERN OHIO

Car shortage and transportation disability are again the prime factors preventing a more normal output. During the week ended Oct. 21 mines produced 308,000 tons or only 49 per cent of potential capacity. Statistics covering cumulative production since Jan. 1 indicate that this field has produced only 8,197,000 tons out of a potential capacity of 25,357,000 tons or 32.3 per cent. Efforts are being made by the Ohio Fuel Administration to increase the car supply and thereby avoid the possibility of an acute fuel shortage this winter.

Considerable anxiety and agitation have developed with respect to available supply of prepared sizes. Because of the low maximum prices fixed by the Ohio Fuel Administrator on coal sold within the state the major portion of such coal is being shipped out of the state where better prices are offered.

Retailers are compelled to purchase considerable quantities outside of the state to meet the requirements of their trade and the railroads are being called upon to perform unnecessary transportation service.

Inquiries have now reached the highest point of the year and such a widespread demand exists that it is impossible to fill at the present limited rate of operations.

Bituminous coal receipts at Cleveland during the week ended Oct. 26 amounted to 1,620 cars, an increase of 149 cars over the preceding week. Industries took 1,281 cars and 339 cars were consigned to retail yards.

In the Lake trade some time was lost during the week because of weather conditions and total dumpings were lower than they have been in some weeks.

BUFFALO

Consumers do not buy as shippers feel they should. The claim on one side is that cars are so short that anything worse in that direction would make it impossible to ship coal enough to keep the supply up, but the consumers affect to believe that the cry of shortage is merely to produce a market for the excess of coal that is coming out of the mines. It is to be hoped that neither party is quite right about it and that the trade will somehow manage to keep going till the movement of cars is more free.

Prices fluctuate. A few strictly Pittsburgh shippers manage to keep up to $5@$5.25 for Youghiogheny gas lump and $4.75@$5 for Pittsburgh and No. 8 steam lump, and sometimes even a little higher, but the bulk of this coal is selling a trifle below these figures. Allegheny Valley mine run is $3.60@$3.85, with all slack $3.25, adding $3.24 to Pittsburgh and $3.09 to Allegeheny Valley for freight.

PITTSBURGH

The local situation is quite devoid of important developments, as has been the case for several weeks past. Production is proceeding in an orderly manner, regulated by car supply, which technically is short but practically appears to permit of consumers' requirements being taken care of very well. The orderly character of the movement is indicated by the fact that demand for odd lots in the open market is relatively small, indicating that consumers are well supplied by their regular sources.

Prices are holding up very well indeed, considering the lightness of demand in the open market, and may not show any further change until the ending of the season for Lake shipments brings about new conditions.

Ordinary steam coal is $3@3.50, depending on quality and tonnage, byproduct, $3.50@$3.75, good grade gas coal running up to $4, with still more paid for special qualities, making a general market range of $3.75@$4.25; domestic 1¼-in. lump, $4.75@$5.25.

NORTHERN PANHANDLE

Mines still find it a difficult matter to secure an outlet to Western markets and particularly the Lakes, owing to freight congestion. There is a somewhat better demand in the West. As in other fields, the car supply is none too good, a large part of the product loaded being for the railroads, with mines loading that class of coal securing a somewhat better supply than others.

Northwest

Docks Are Jamming and Buying Continues Slow

Lake Shippers Now Fear Trouble When Cold Weather Starts a Rush—Fewer Cargoes En Route—Temporary Slump in Bituminous Prices.

Markets are sluggish on bituminous coal with the result that the heavy cargo shipments of the past six weeks have piled the docks fairly high. This condition, which appeared about a week ago, is getting troublous. Prices in some cases have softened further, especially on a few large deals in steam sizes, and are expected to drop within a week or so on coals that cannot stand storage. This general situation is shutting off shipments from lower ports to an extent and is expected to cause trouble when the first stiff cold comes, as the fuel supply for this region can hardly be ample if shipping does not continue heavy until Dec. 1.

Considerable quantities of anthracite are reaching the docks. There is no such public apathy over hard coal. Instead, the scramble to obtain it has grown almost exciting. Prices generally remain firm with a slight upward tendency, though there is no skyrocketing.

DULUTH

More than 3,000,000 tons of coal now lie on the docks at Duluth-Superior harbor because consumers are slow and coal men are beginning to fear that the docks will be full before the close of navigation. The capacity of the harbor docks is but 7,500,000 tons. Shipments will slowly drop off. Last week forty-eight cargoes were received of which eight were of anthracite, but only eighteen are reported on the way of which two are hard coal. A week ago more than thirty cargoes were on the way here. Not enough coal has gone out to insure a plentiful supply, and coal men believe there may be a $2 increase in bituminous before Feb. 1. Consumers, of course, are waiting for a drop in prices, and base their hopes upon the jamming of the docks, which usually indicates plenty.

Despite the prediction of increased prices, at least one dock cut $1 a ton to move run of pile to two public utilities on an aggregate contract of about 15,000 tons. The run of prices for both bituminous and anthracite is firm, with the exception of quotations on Hocking screenings which are weakening, because of the danger of fire in large stock piles.

The anthracite market is chaotic. Those with orders placed are getting coal as best they can. It is thought, though, that the emergency will have passed in a week or two. Bituminous inquiries are beginning to leak in from independent iron mining companies on the Mesaba range that are slow to order. The steel corporation is receiving much coal indicating that the mining season will be active.

MINNEAPOLIS

The market here is sagging and weaker under the arrival of good stocks at the docks, and a lack of support from buyers. Another undermining factor is the showing from the all-rail trade, in placing a considerable tonnage here. As a result dock interests have begun to make concessions.

Indications are that the docks at Duluth and Superior will have perhaps 5,000,000 tons of coal in another five weeks. That quantity is not equal to any normal winter's needs. But this is not a normal winter in demand so far. The railroads cut down consumption during the late summer by taking off about seventy trains, some of which were out of service for three months. Industries have been running cautiously for some time, and have made their fuel last longer.

The car situation has cut down the movement from the mines or there would be a much larger movement, both from the docks and from the all-rail fields. But despite this handicap, there has been a large amount of all-rail coal moved into the Twin Cities from the Illinois fields. Around 100,000 tons of hard coal have been received on the docks so far, and the Northwest may count upon perhaps 40 per cent of a normal winter's needs of hard coal. Some of this may have to be moved all-rail.

MILWAUKEE

Mild weather seems to soften the popular clamor for coal, but dock men remain in an uneasy frame of mind. Fifteen cargoes of anthracite, aggregating 117,904 tons, reached port in October. This coal is being rationed out to retailers, who, in turn, are restricting deliveries so as to spread the supply. The price of anthracite continues unchanged.

There has been a slight check in the movement of soft coal, due to the fact that receivers have not been buying much during the past two weeks. The docks are fairly well filled.

October will show up well in coal receipts. Thus far fifteen cargoes of anthracite and sixty-three cargoes of soft coal have been unloaded, the soft coal tonnage aggregating 560,416 tons. Cargo receipts for the season thus far aggregate 118,614 tons of anthracite, and 1,831,371 tons of soft coal, against 842,550 tons of the former, and 2,273,902 tons of the latter during the same period last year.

The City of Milwaukee remitted a penalty of $2,700 imposed on the Callaway Fuel Co. for coal furnished which did not come up to the standard of thermal units. The company claims that the pooling system makes it impossible to guarantee the quality.

New England

Little Change in Market; Inquiry from Small Users

Certainty of Car Shortage Causes Many to Realize Prices Are Near Bottom—Receipts of British Coal Wane—Adverse Criticism Heard.

November shows little change in the current market. Inquiry is still scattered and confined generally to small users who figure that with possible car shortage present prices are about as low as can reasonably be expected, at least for the near future.

Receipts of British coal are steadily diminishing and by another fortnight, it is reported, the last cargoes will have been received. There is much complaint over some of the grades shipped; in fact delays on certain of the railroads out of Boston have been attributed to the character of the coal.

Apparently none of the corporations is buying spot coal, except in sparing amounts, and persistent canvass discloses very little prospect for comprehensive purchases the next thirty days. The number of steam colliers tied up at this end is one indication of the poor outlook for steam coal the balance of the season. A fair amount of coal is coming forward on contract, but almost none at all on current purchases.

There is a little buying of Pennsylvania grades all-rail, although prices are at what would have been considered a few weeks ago a very low point. A few quality grades are being moved at remunerative prices, but this means a range of $4.50@$4.75 per net ton f.o.b. mines. Among the medium coals there are some of very good reputation that are an easy purchase at $3.50@$3.75.

Pocahontas and New River still show large accumulations at Hampton Roads. Judging from the market here these will continue to be heavy throughout the month. There are reports of car shortage on the Southern roads, but not as yet has the lack of equipment in any sense affected the spot market in New England.

While Navy Standard at Newport News and Norfolk sold as low as $6.65 per gross ton f.o.b. vessel a week ago, there is a feeling in the trade that the market has strengthened a bit and that $7 is a fair average price for high-grade coal.

Cincinnati Gateway

Prices Spurt with Embargo To West on C. & O. Coal

Buying of Fuel from Southeastern Kentucky and Off N. & W. Gains—Steel Mills, Utilities and Lake Buyers Evince Interest—Smokeless Has Odd Price Range.

Prices took a decided spurt when increased buying of southeastern Kentucky coal as well as that off the N. & W. resulted from the embargo placed on the western movement of fuel originating on the C. & O. Immediately there was scurrying by steel mills, public utilities and large consumers that had been using C. & O. coal. Besides this Lake buyers showed added interest and the whole combination moved the price up a dollar a ton within the space of three days.

For the first time in weeks steam coal was selling within the range of the gas and byproduct. Smokeless, due to the Spens ruling, presented some oddities in the price range. L. & N. reports show that the motive power on this line is still in bad shape and the movement is slow.

CINCINNATI

Although there has been an ever-increasing offering of domestic coals the demand still exceeds the supply and there has been little price recession. However, the quotations have narrowed closer to $6-coal than for some time past. Only the smokeless prepared is out of line and this through the fact that there is little in the hands of the jobbers and those with car numbers are holding it at a fancy figure.

There is little or no congestion in the yards of the connecting lines in Cincinnati nor at Portsmouth so it all depends upon the ability of the C. & O. to clear its lines so that there will be a clear western movement once more.

River business has again pulled up the total tonnage being delivered between Ashland and Louisville to a good figure. One Cincinnati firm with river connections is delivering splint lump at $8.75 in the city and $9 on the hilltops. Others are asking $10 for all-rail coal. Pocahontas lump quotations have been discontinued by one of the largest firms while others are still quoting $10.50@$11.

LOW-VOLATILE FIELDS

New River and the Gulf

Matters have reached a point in the New River field where coal is being debarred from Western markets by frequent embargoes on all tonnage originating east of Handley. This has led the operators to go before the I. C. C. to obtain relief. Their position is that they are entitled to an equal proportion of Western shipments as compared with other districts on the C. & O. Embargoes have worked a hardship at a time when the Eastern market, particularly Tidewater, is overstocked.

Although there has been a slight improvement in transportation conditions in the Winding Gulf region production increases have been limited, with the mines producing less than 100,000 tons a week. The open market is rather flat as mines in this region are unable to ship to the West, where coal originates on the Virginian at least, owing to lack of interchange. For Tidewater, producers are not getting more than $3.50@$3.75.

Pocahontas and Tug River

Although Pocahontas production is being gradually increased, railroad disability losses alone are costing nearly 350,000 tons weekly. However, mines are able to divide their tonnage between Eastern and Western markets to a greater extent than some other low-volatile fields, at a time when the Eastern market is soft and when the piers are overstocked.

Although there has been a partial recovery from the slump in the Tug River field caused by almost a complete car famine, the mines are loading far less tonnage than was the case during either the coal or the rail strike. Production hinges entirely upon transportation conditions. Where it is possible, producers are shipping to Western markets because of a better price prevailing in that section.

HIGH-VOLATILE FIELDS

Kanawha

Kanawha mines are working just about one-fifth of the time and there does not appear to be any improvement in sight. Railroad fuel mines, in many instances, are being given preference. The car shortage with its resulting idleness is creating much dissatisfaction among the miners. Prices in the West for high-volatile exceed the Eastern market. Congestion has been making it difficult, however, to get coal through.

Northeastern Kentucky

With more cars available, the improvement has not been pronounced, and mines in the aggregate are not producing as much as 40 per cent of potential capacity which is scarcely sufficient to handle all contract orders. The railroads and public utilities are buying on a larger scale and there also appears to be a disposition among industrial customers in the West to loosen up a little.

Logan and Thacker

Less than a third of the normal output is being produced in the Logan region. Curtailed car supply has forced many mines into almost complete idleness. Western markets were somewhat better, with the result that there was a higher level of prices. Steam mine run averaged $3.75, with gas coals somewhat higher.

Owing to the car shortage the Kenova-Thacker mines are not producing more than 40 per cent of potential capacity or little over 100,000 tons a week. There has been a slight improvement in the situation, however, within the last two weeks. The limited production is not sufficient to meet the market requirements, for Western demand has increased. Most producers are able to handle contract orders only. So far as spot sales are concerned the ruling prices during the week ended Oct. 21 were $3.75@$4.

South

BIRMINGHAM

The situation in regard to car supply has grown more acute within the last week and is reflected in a slump in production. It is likely that the output will not go over 325,000 tons, a gradual decline having been noted for several weeks. Mines on the L. & N. and the Frisco have suffered, especially for lack of equipment.

Despite the difficult movement and the fact that there is little surplus supply for the spot trade, demand is not at all urgent and the amount of business being taken on is comparatively small. Consumers appear to be little interested beyond current requirements where contracts do not exist, but where fuel agreements are in effect there is an effort to expedite shipments and secure fuller compliance with contract deliveries.

The situation as regards domestic coal is one of much concern, as the output, measured to a great extent as it is by the demand for steam fuel, is far below the needs of the trade. The cool weather has rejuvenated to some extent the retail end of the market.

There has been no change in prices the past week, the minimum quotations on steam running 25c.@50c. under the fixed schedule, while maximum prices prevail for all domestic grades.

VIRGINIA

The output in southwest Virginia is ranging from 62 to 66 per cent and in some parts of the field, notably on the Southern, the output is as high as 84 per cent. Coke production too is on a larger scale. Contract orders are sufficient to absorb the greater part of the output so that there is really little spot coal available.

Canada

TORONTO

Cool weather has brought a rush of orders for anthracite which are being filled as far as possible from the limited supplies received, deliveries being restricted to one ton.

The demand for bituminous coal continues light and prices are variable, with quotations for ¾-in. lump in carload lots f.o.b. destination, $8.75@$10.25. Pennsylvania smokeless is about $9 wholesale and $12 retail. The city has received further supplies of Welsh coal which is being distributed in small lots.

News Items From Field and Trade

ALABAMA

The Black Creek & Valley Coal Co. is the name of a new company organized in Jefferson County for the purpose of engaging in the mining and sale of coal. The officers are, E. C. Creel, president, O. J. Lynn and S. A. Latham, vice-presidents and J. M. Jerrell, Jr., secretary-treasurer. The capital stock is given at $100,000.

Properties known as the **Pawnee Land & Mineral Co.'s holdings,** situated in Blount County on and near the L. & N. comprising approximately 2,800 acres of timber and coal lands, are scheduled to be sold at Oneonta, Blount County, Nov. 15, 1922.

Under the direction of the federal fuel distributor, Lieut. E. P. Eldredge, of the United States Navy, has opened offices in Birmingham and is receiving from coal producers in Alabama daily reports of coal shipments on blanks which are provided. An effort will be made to induce operators to make shipments to nearby territory only or within the territory normally supplied from this field in order that equipment may be unloaded and returned for reloading as quickly as possible and thus relieve to some extent the acute car shortage now existing.

The suit of the state against the **Montevallo Mining Co.,** growing out of the bankruptcy proceedings of the early part of the year, which resulted from the breaking of the contract for the hire of state convicts, has been withdrawn by the state, as the coal company has paid up the amount due for hire of the convicts and is continuing the use of the state yards under a new agreement.

COLORADO

Development of the largest known continuous body of coal in the United States is the forecast to be inferred from the announcement that surveys have been completed for a railroad spur leading from Paonia to the properties of the **Gunnison Mountain Coal & Coke Co.,** on Minnesota Creek. A branch railroad of nine miles has been found feasible at a grade of 2.3 per cent. The line is to leave the North Fork branch of the D. & R. G. near the crossing over Minnesota Creek in the corner of the Paonia yards, and will follow that line to Lick Creek, where the coal will be mined and the new mining town established.

IDAHO

Towns around the Teton basin in this state have been suffering from the high price of coal to such a degree that they have turned their eyes upon the Teton mines as their immediate source of fuel. Many consumers in upper Snake river towns, such as Blackfoot, St. Anthony, Idaho Falls, Ferth, Shelley, Rexburg, Rigby, Tetonia, Driggs and Squirrel are making contracts with trucking concerns to haul their coal from the mines. Nearby consumers are doing it in their own wagons and trucks. This is giving the Teton basin a considerable coal boom.

ILLINOIS

Announcement has been made of the recent organizing of a new coal company which expects to sink a shaft near Dorrisville, Williamson County. The concern has incorporated under the name of the **Rhonnda Coal Co., Inc.,** with headquarters at Dorrisville. The following officers have been elected: President, Joe Pierson; vice-president, O. L. Turner; secretary, C. L. Rew, and treasurer, James Gray.

The O'Gara Coal Co., of Chicago, has reopened its No. 12 mine at Harrisburg. The mine was closed last April when the miners struck and has not been operated since that time. The mine is one of a dozen or more operated by the company in that district.

The mine of the **Kuhn Colliery Co.,** at Du Bois, Washington County, is now running full blast. The mine is now being operated for the first time in about 18 months.

A. P. Titus, general manager of the Chicago & Alton R.R., Bloomington, has resigned to accept the vice-presidency of the **Mason Coal Co.,** of Springfield and Chicago. Mr. Titus went to the C. & A. in 1912 as general superintendent. Since the road passed into the hands of receivers, he had been chief operating officer.

Three new mines were recently opened in Henry County. Now comes the report that experiment tests taken at the John Root farm, one mile northwest of Galva, disclosed a vein at a depth of 20 ft. Equipment will be installed at once.

The Rex Coal Co. has begun construction work on a 600-acre tract of land half a mile east of Warner, near the Orion and Coal Valley districts. The company has incorporated for $20,000. The first vein of coal was discovered at a depth of 28 ft. with a thickness of 26 ft.

The Central Illinois Public Service Co. has started the construction of the $6,000,000 power plant to furnish power to the mines in Jackson, Franklin, Perry, Williamson and Saline counties. Power distribution will begin in October, 1923. The main line will be to West Frankfort and will carry 133,000 volts. It will be a steam power plant, although on the Mississippi where future power may be secured from dams. Coal will come in via rail and river. This plant will displace several small ones in southern Illinois.

J. W. Byrne, formerly with the Sunnyside Coal Co., has been appointed on the sales force of the Brofer Coal & Mining Co., Chicago.

W. E. Rutledge, president of the Security Coal & Mining Co., Chicago, recently spent several days on a hunting expedition in Louisiana.

Coal mining companies in Cambria County have filed appeals with the county commissioners from the tri-ennial assessment on the grounds that the real estate was not assessed at the actual value thereof, being assessed without due regard to the valuation and assessment made of other similar properties in the country, but was assessed in excess of the value and assessment of such other properties. The following companies filed appeals; Holding of the **Wilmore Coal Co.,** Richland and Adams townships and Scalp Level borough and Conemaugh, Croyle and Stonycreek townships; **Berwind-White Coal Co.,** Richland and Adams townships and Scalp Level borough; **Maryland Coal Co.,** Richland, Croyle and Adams townships.

The Indiana & Illinois Coal Corporation has installed a generator at the mine at Kortkamp, which will furnish power for the operation. The estimated cost is $35,000.

The Service Fuel Co., of Kentucky, has filed incorporation papers in Springfield and will establish headquarters in Chicago. The capitalization is $100,000. J. L. Rodgers is president and J. B. Torbart, secretary.

INDIANA

A special judge in the Gibson Circuit Court at Princeton, recently fined the **Oakland Coal Co.** $500 and costs for failing to obey a court order of May 22, restraining the coal company from pumping water from its wells on the land of Heber D. Wilson. The judge censured the coal company for its disregard of the court's instructions and said he was sorry the officers of the company had not been made defendants in the suit out of which the restraining order grew.

A codification of the mining laws of Indiana to be presented for passage at the next session of the general assembly, received tentative approval by the special codification commission at a recent meeting in the office of Cairy Littlejohn, mine inspector of the state industrial board and chairman of the commission. The codification to be presented will group the mining laws of the state under several important headings, making all laws bearing on the same general subject sub-heading under the principal classification. The members of the commission at the meeting were John Hessler, president of District No 11; William Mitch, secretary-treasurer of the district; William Johnson, Indianapolis, and Henry Adamson, Terre Haute, operators; Samuel Wilson and F. J. Wilton, deputy state mine inspectors.

The Deep Vein Coal Co. has purchased a plot of ground northwest of Princeton, near the Evansville-Princeton traction line. On this ground the operating company intends sinking a shaft to open the old entries of the Princeton mine. The chief purpose of such a shaft, it is said, would be to recover valuable mining machinery which has been there since the cave-in last spring. The new shaft of the company, two and one-half miles south of Princeton, is down about 100 ft. and will be completed about Jan. 1.

IOWA

The Eldora Coal Co., of Eldora, has been incorporated with capital of $50,000. Herbert A. Huff is the president, H. J. Rees, vice-president, and W. E. Rathbone, secretary-treasurer.

KENTUCKY

For perhaps the first time in coal history in Kentucky **western Kentucky operators invaded the eastern Kentucky selling field,** when they secured institution contracts at Lexington and Frankfort, on bids of $2.25 for western Kentucky screenings. The freight rate from western Kentucky was about 40c. a ton higher, but the price is around $1.75 a ton lower than eastern Kentucky mine quotations.

It is reported that recent rains resulted in a sufficient rise in the Ohio River to permit a number of coal tows that were tied up or aground in the upper Ohio to move forward toward Cincinnati. These tows endeavored to get out on an artifical rise created by manipulation of locks and dams by federal engineers, but the rise failed.

Some real pressure upon Congress to get the **Ohio River navigation projects** put through will be exerted this winter by the **Ohio Valley Improvement Association.** It is calling attention to the fact that a decade ago the promise was made at Washington to start extensive work up and down the Ohio and it now asks that $20,000,000 be appropriated to complete the 9-ft. stage project that has been waiting for so long. The association at its October meeting in Louisville, re-elected Oscar F. Barrett president, W. P. Culkins, secretary, and George Puchta treasurer. They are all Cincinnati men. The executive committee is Edward Gibbs, chairman, Morris G. Freiberg, James A. Reilley, A. K. Nittent, Mr. Culkins, George F. Dieterly, Julian Tollack, Mr. Puchta and J. T. Hatfield. All of these men are from Cincinnati except Mr. Hatfield, who lives at Covington.

MICHIGAN

Under supervision of Charles F. Dunn, fuel administrator for Wayne County, the **Detroit Coal Exchange** has sent out to coal dealers in the county the application blanks which they are required to fill out and sign preliminary to receiving the **license provided for under the new fuel control law.** The application blanks are designed to elicit information concerning the amount of fuel handled by the dealer last year, the proportion of it sold for domestic use, the quantity of bituminous, anthracite or coke sold so far this year and the amount of each of these fuels that the dealer now has on hand. Some representatives of the coal trade in Detroit are predicting that the law will have the effect of shutting out of the state considerable coal that would otherwise have been sent here. Operators, it is said, will distribute their coal in states where they do not incur risk of its seizure or of other developments interfering with completion of sales.

B. H. Bloch Coal & Supply Co., has been incorporated at Muskegon, capital, $50,000.

MISSOURI

Evan Jones has been appointed superintendent of the Marriott mines at Moberly and has gone to that city to assume his new duties.

Elmer W. Johnson, living near Quitman, has uncovered a vein of coal on his farm and steps will be taken at once to mine it. It is the largest and best vein of coal that has been found in this section.

Thomas L. Casey has been appointed sales manager for the **White Ash Coal Co.** at St. Louis.

George A. Capps, for many years with the Missouri & Illinois Coal Co., of St. Louis, has organized the **Capitol Coal & Coke Co.** to do a general jobbing business.

H. E. Tighe has been appointed Southwestern sales agent for the Bickett Coal Co. at St. Louis, succeeding **M. D. Joyce**, who has gone into the jobbing business as the Continental Coal Co., at St. Louis.

The St. Louis Coal Co. has filed articles of incorporation with the secretary of state, showing a capital of $10,000. The company will conduct a wholesale coal business. The shareholders are Michael Joyce, Melvin Joyce and Harold T. Joyce.

NEW YORK

Election of Alfred D. Flinn as director of the Engineering Foundation, which is fostering organized industrial research on a nationwide scale, is announced by Charles F. Rand, chairman of the foundation. Mr. Flinn is the first incumbent of the new post, created by the foundation's governing board. He will retire as chairman of the Engineering Division of the National Research Council, a position which he has held since October, 1921, but will continue as secretary of the United Engineering Society in order that the foundation may continue intimate relations with the founder societies. Mr. Flinn has been secretary of this society and of the foundation since January, 1918, and is widely known by engineers throughout the country. The Engineering Foundation Board adopted the report of the executive committee, which recommended a continuance of intimate relations with the National Research Council, including financial support.

George W. Fleming, of New York, president of the Elkhorn Coal Corporation, operating in Kentucky, underwent a serious operation at St. Vincent's Hospital in New York City on Oct. 5. About ten months ago Mr. Fleming was operated upon for appendicitis but never fully recovered from the effects of the operation.

The Seiler Coal Co., New York, is now selling the output of the **Pine Hill Coal Co.**, which recently purchased the colliery of the **Oak Hill Coal Co.**, giving it a combined output of approximately 800,000 tons. G. W. Seiler is the president of the Seiler Coal Co., Clarence B. Sturgis, president of the Pine Hill Coal Co., vice-president, and H. E. Holste, treasurer. W. P. Gibby, who was with the Pine Hill Coal Co. and C. B. Sturgis for ten years in charge of sales, is in charge of line sales for the Seiler Coal Co.; W. C. Lawson has charge of Tidewater sales; G. W. Yaris, bunkers, and William Early of bituminous and anthracite steam sales.

Stockholders of the **Pennsylvania Coal and Coke Corporation** at a special meeting called for Dec. 21 will vote on a proposition to increase the authorized capital stock from $7,500,000, consisting of 150,000 shares of $50 par value, to $12,000,000. Thomas H. Watkins, president, in a letter to stockholders, says that the proposed increase is recommended to make available additional stock should directors recommend a stock dividend, or for other corporate purposes. No action has been taken by the board on a stock dividend.

OHIO

Through a deal that has been consummated **Jewett, Bigelow & Brooks** of Detroit has leased to the **Holmes Coal Co.** of Cincinnati its various mining properties in West Virginia and Kentucky for a term of years. The new corporation will have a large tonnage to market annually. Calvin Holmes, who is at the head of the new corporation has long been known to the coal trade as sales manager for the R. O. Campbell Coal Co. of Atlanta, the Bewley Darst Coal Co. of Knoxville and the Blue Diamond Coal Sales Co. Associated with him is E. L. Douglass who was president of the Hazard Coal Operators' Association and representative of the government both under the Garfield and the Hoover administrations. Mr. Douglass has been the JBB. mining man for some time past. The new order of things will take place Nov. 15. Jake Brady, who was recently appointed general sales manager for JBB. will go into business for himself.

The Valley Camp Coal Co. has opened a Columbus office at 175 South High Street, to be operated during Lake navigation. T. B. Bradford is in charge of the office, which is connected with that of the Hocking Valley Products Co.

H. M. Schaff, head of the H. M. Schaff Coal Co., of Cleveland, was called to Columbus recently on account of the death of his mother. Mr. Schaff was formerly a resident of Columbus.

The Monarch Coal & Coke Co., Columbus has been chartered with a capital of $30,000 to wholesale coal and coke. Floyd Teter of Belington, W. Va., is president and treasurer, and E. E. Learned of Columbus, secretary. The company has made connections to sell the output of the **Crab Orchard Mining Co.**, at Freeport and other operations.

The Newark Coal Co., has been chartered with a capital of 500 shares, no par value designated, by B. W. Osborne, E. M. Arnold, John H. Arnold, John Christoff and C. N. Osborne.

Among recent visitors from producing fields to Cincinnati were **L. M. Birk** of the Mountain Gem Coal Co., East Bernstadt, Ky.; **H. H. Randolph** and **Dr. Wm. M. York**, of the Mud Lick Coal Co., of Williamson, W. Va.; **R. C. Palmer** and **J. C. Countryman**, of the P. M. C. Coal Co., of Sprague, Ky., and **Calvin Holmes**, of Knoxville.

The Ohio & West Virginia Coal Co. has located its offices at Columbus, where a jobbing business will be done, connections having been established with mines in the Hocking Valley, Jackson, West Virginia and Kentucky fields. David Armstrong of Jackson is president and manager.

The Uhrig Coal Co., of Nelsonville, has been organized with an authorized capital of $15,000 by D. H. Armstrong, A. H. Schory, R. W. Maupin, O. P. Amann and E. R. Davis. This concern has just about opened a drift mine near Nelsonville and Adam Uhrig is president and general manager.

A disastrous fire which destroyed the generating and hoisting plants of the **Cambridge Collieries Co.**, at the Florence mine near Caldwell caused a loss of about $100,000. The cause of the fire is believed to be a short circuit.

OKLAHOMA

As the winter season approaches the number of orders being distributed among the various coal operators are showing a very healthy increase. Reports from the **Crowe Coal Co.** are to the effect that an increased office force is necessary to take care of the business. **The Warden-Pullen Co.** reports a steady increase of orders, and the addition of new cables and pit cars for the new mine No. 2, opened last year. **The Pittsburg-Midway Co.** is running full time, and the **Wise-Buchanan Co.** has recently installed four modern electric undercutting machines, and an electric loading boom.

The Adams Coal Co. of McAlester, has been organized and charter filed with the secretary of state at Oklahoma City. The company is capitalized at $25,000 and the incorporators are: M. D. Adams, G. W. Giles and R. E. Jones, all of McAlester. The company will do a coal mining and sales business.

PENNSYLVANIA

The man power and output in the Connellsville coke region is increasing, and the number of strikers returning to work also continues to increase steadily. **The Century Coke Co.** resumed operations during the past week.

The Scranton office of the Bureau of the Department of Labor and Industry reports that there are 5,000 men idle because of the failure of the **Glen Alden Coal Co.** to resume work. Other mines in that district, while not working full time, are able to keep about 75 per cent of their men employed most of the time. The mild weather has acted against a demand for coal, and the office has informed the bureau that shipments to points outside the state have been retarded through the inability of the transportation companies to handle the output of the mines. The shopcrafts strike is blamed for this condition.

The Montour Collieries Co., Allegheny County, has filed notice of an increase in indebtedness from nothing to $130,000. W. J. Gillilan, Pittsburgh, is president

Bituminous coal companies recently chartered at Harrisburg are: **Expedit Coal Co.**, Ebensburg, capital, $50,000; treasurer, Fred J. McFadden, Ebensburg. The incorporators include the treasurer, John D. O'Brien and Charles R. Meisel. Ebensburg. **Brien Coal Co.**, Ebensburg, capital, $5,000; treasurer, John D. O'Brien, Ebensburg. Incorporators: John D. O'Brien, Charles R. Meisel and C. Randolph Myers, Ebensburg. **Fox-Twilight Coal Co.**, Twilight, capital, $5,000; treasurer, Samuel R. Fox. Incorporators, Jesse Fox, Samuel R. Fox and Lauris Fox, Twilight.

Under the direction of **S. P. Howell**, explosives engineer, work is being done at the explosives experiment station of the Bureau of Mines, Bruceton, on the determination of the precise quantity of poisonous gases produced by about 50 per cent of the permissible explosives.

Creditors of the **Fidelity Coal & Coke Co.** met in Pittsburgh late in October. Elliott Frederick, formerly the receiver, is now the trustee. He announced the trustee's accounts of the company showed $4,771.07 in hand for distribution.

The Scott Haven Coal Co., Allegheny County, has filed notice at the State Department of an increase in capital stock from $5,000 to $17,000. **E. E. Smith**, Pittsburgh, is treasurer.

The Alden Coal Co., of which Hunt Hughes of Philipsburg is superintendent and general manager, is building twenty dwelling houses at the Alden operation in Decatur township, Clearfield County. The buildings are of a modern and attractive design with concrete foundations and are being erected in a semicircle, fronting on a large tract of level ground which is being converted into a grass plot with shrubbery and flowers. All the houses are to be occupied by Alden miners.

The Pennsylvania Legislature of 1923 will probably have to pass on the question of imposing a manufacturers' tax. The question has come up in the past and the tax bill has never got far. Opponents of such a tax are preparing bills providing for a tax on natural resources. If the anthracite tax law is finally declared to be constitutional it is almost certain there will be a determined effort to provide for a similar tax on bituminous coal. Oil and gas and possibly certain ores may come in for their share of attention. During debates of past legislative sessions emphasis has always been laid upon the competition bituminous producers must meet from producers of other states and the soft coal industry escaped a tax. It is claimed that other states, or some of them, producing bituminous have a sales tax that taxes coal. This tax is similar to the mercantile tax of Pennsylvania, but this tax does not affect coal.

Through a deal recently closed, the property of the **Paramount Coal Mining Co.**, located at Coalport, was sold by M. R. Brannan of Johnstown to a group of Johnstown men headed by Rocco Cartisano. The price paid was said to be in excess of $60,000. The mines will be operated by a new company, of which Cartisano is president; George Caffarelli, vice-president; Frank Lafaro, secretary; Joseph Ravida, general manager, and Samuel Castagna, assistant manager.

The Safety Electrical Appliance Co. is being formed in Johnstown. The company will manufacture trolley wire hanging material, pumps, etc., of new designs which will be sent to Pittsburgh to be tested by the Bureau of Mines for use in gaseous mines.

Improvements are being made to the big storage plant of the **Lehigh Valley Coal Sales Co.**, at Ransom. The greatest replacement being made is that of a new trestling. The concrete work for the foundation is complete and steel for the superstructure has arrived.

The Hillside Coal & Iron Co. announces that plans are well under way whereby the present wooden breaker of the Butler colliery will be raised and a modern steel structure erected in its place. The cost of the breaker will run into the hundreds of thousands of dollars, and will be equipped with all modern machinery, including the wet jig process of separating the coal and slate.

The Lehigh Valley and the Philadelphia & Reading Coal & Iron Companies are preparing to open new surface strippings in the anthracite field to increase production following the five months' suspension.

States charters recently issued for bituminous coal companies included the following: **The Iron Bridge Coal Co.**, Connellsville, capital, $40,000. W. D. McGinnis. Connellsville, is treasurer and the purpose of the company is the mining of coal and the manufacture of coke. The incorporators are: W. D. McGinnis and J. Fred Kurtz, Connellsville and A. G. Miller, Mt. Pleasant, R. D. 4. **C. F. Smith Coal Co.**, Uniontown, $11,000, capital; C. F. Smith. Uniontown, treasurer. Purpose: Mining of coal and dealing in coal lands. Incorporators: C. F. Smith, B. S. Bartholomew and E. C. Bierer, Uniontown.

The breaker, engine house and other surface equipment of the **Bernice Anthracite Coal Co.** in Sullivan County, has been sold at public auction to a representative of **William Boardman**, of Jamaica, L. I., for $25,000. The sale does not include the leases on coal holdings.

TEXAS

A new wage scale, subject to ratification by miners and operators in Texas, has been negotiated and drafted at a joint meeting in Fort Worth. The agreement, if it is accepted by both sides, will continue operative until March 31, 1923. By that time it is expected the new national basic scale will have been agreed upon. Only 300 miners are affected by the agreement, it is said, most of them being at the mines of the **Bridgeport Coal Co.**

Henry Zweifel, United States attorney for the Western District of Texas, with headquarters at Fort Worth, has been conducting an investigation into the **alleged misconduct of Texas State Rangers toward striking coal miners** in the Mingus and Thurber mining districts of west Texas. Recently complaints alleging misconduct on the part of the state officers toward the miners were filed by John Wilkinson, district president of the U. M. W. An investigation was made by state officials, who reported that the charges were unfounded. Mr. Wilkinson then renewed his demand for federal investigation, and Mr. Zweifel was directed to make a full investigation. He is not yet ready to disclose the result of this investigation.

Distribution of coal supplies in Texas during the coming winter months will likely be taken in charge by the **Texas Railroad Commission,** as even a moderately severe winter will be certain to bring about a serious shortage, according to C. R. Goldman, of Dallas, secretary of the Retail Coal Dealers' Association of Texas. The members of the association, individually and as a unit, have offered their services to the railroad commission in the fuel situation, and have been accepted.

The Consumers' Coal Co. of San Antonio has recently been organized with a capital stock of $250,000. The company will conduct a general wholesale and retail coal dealers' business in San Antonio. Incorporators are: Joe Flory, J. T. Hall and A. L. Moon.

UTAH

The Democratic party declares it will repeal the Public Utilities Commission Act if its slate is elected this fall. The party suggests no legislation to take the place of the Act.

The state land office has denied the coal land lease application of **A. J. Mayes** at 10c. a ton royalty and offered the involved land—nearly 700 acres—at 12½c. royalty.

The coal deposit to be opened by the **Columbia Steel Co.** in Carbon County is being tested for its coking possibilities. The plans for building the new town are ready and various contracts are being let.

VIRGINIA

The Chesapeake & Ohio Ry.'s new steel coal pier at Newport News will be under construction next spring, according to plans at present. The structure will cost $2,604,000, and will be one unit of a development which will cost $16,000,000 on the entire system of this road. The construction of this pier will increase the dumping capacity of the Newport News terminals by from 500,000 to 750,000 tons per month. **The Virginian Railway** is expected to begin about the same time on the construction of a $3,000,000 steel coal pier to **supplement its Sewall's Point facilities,** while the **Norfolk & Western is electrifying its Piers 2 and 3,** and will be ready for operation, with 120-ton dumpers, in the spring. These improvements are expected to make Hampton Roads one of the largest coaling stations in the world.

WEST VIRGINIA

The J. L. Beury Estate, of Charleston, has been incorporated with an authorized capital stock of $225,000. This estate has large coal holdings in the New River field where the late J. L. Beury was one of the pioneer operators. Under the terms of the articles of incorporation the estate is permitted to mine coal and to hold real estate, mineral lands, etc. The incorporators are R. T. Hubbard, F. N. Bacon, B. E. Baker, A. B. Abbott and T. H. Mahood, all of Fayetteville.

Further development of Monongalia County coal lands is presaged by the organization of the **Two States Coal Co.,** with headquarters at Morgantown. This enterprise is capitalized at $50,000 and the leading figures in the new concern are John E. Blaker, A. C. Ice, M. E. Ice, of Morgantown; C. S. Riggs and L. A. Riggs, of Fairmont.

Owing to the fact that **William Barrick** has been appointed manager of several **coal** operations in Logan County, he has withdrawn as one of the Republican candidates for the legislature of West Virginia from McDowell County.

John M. Wolfe, formerly general superintendent of the Jamison Coal & Coke Co., in West Virginia, but now representative of the Operators' Fuel Agency, in Philadelphia, was a recent visitor in the Fairmont region.

George B. Taylor, general manager of the Jamison Coal & Coke Co., with headquarters at Greensburg, Pa., was a recent visitor in Fairmont inspecting the Marion County plants of the company.

Major W. P. Tams, of Tams, and **George Wolfe,** secretary of the Winding Gulf Operators' Association, are two members of a committee named by smokeless operators to present the details connected with the operation of smokeless mines to the new fact-finding commission recently created by Congress. **W. D. Ord,** of Landgraf, president of the Empire Coal & Coke Co., is chairman of the committee.

At the opening of the trial of C. Frank Keeney, president of District 17, U. M. W., in Charles Town on Oct. 23, under an indictment charging him with being an accessory before the fact in the killing of Deputy Sheriff George Munsey, of Logan County, during the armed march of 1921, T. C. Townsend, chief counsel for the president of the district mine workers' organization, entered a demand to know who was representing the state and at the same time made the charge that previous prosecutions had been financed by the Logan operators' association. He contended that a conspiracy existed to crush unionism in the state. Replying to Mr. Townsend, Colonel F. W. Brown told the court that he and three other attorneys in addition to Lon Chaffin, prosecuting attorney of Logan County, represented the state.

The trial of George Barrett, international board member of District 29, U. M. W., indicted about six weeks ago along with Lawrence "Peggy" Dwyer, also a board member of District 29, and Davis Robb, an international organizer for the union, by a grand jury in Fayette County, on the charge of "counseling, hiring and commanding parties to steal and conceal a machine gun taken from the railroad station at Pax, in August, 1920, and counseling and aiding in the disorders prevailing at Willis Branch," was begun in the circuit court of Pocahontas County before Judge S. H. Sharp on Oct. 17. The disorders at Willis Branch grew out of the refusal of William McKell and associates, owners of the property, to sign an agreement with the union. The place was literally shot off the map by union miners.

It is generally reported in the New River field that **Henry Ford,** who recently abandoned his **Nuttallburg mine,** is willing to part with that property, and that the **Maryland New River Co.,** which has several operations in the same section, is negotiating for a lease on the Nuttallburg property, having in mind the operation of the mine from the Keeney's Creek opening.

In view of the fact that there were **41 fatal mine accidents in the state during September,** R. M. Lambie, chief of the department of mines of West Virginia, in an effort to minimize the danger attendant upon the mining of coal and reduce the number of accidents has called attention of operators, mine officials and employees to the large number of accidents and has said, "I want you to carefully read the accident report; analyze it carefully and you will note that the majority of these accidents could have been prevented had the proper precautions been taken. The killing of so many men in and about the mines and the crippling of many more is a most lamentable thing, as preventable accidents are not only a liability to the mining industry but are also an appalling loss to the state. The mine officials must see that every precaution is taken to prevent accidents. The most rigid discipline must be enforced, and employees, officials and operators are asked to co-operate with us in getting rid of the chance taker, as he not only endangers his own life but also the lives of his fellow workmen."

C. C. Beury, head of the Beechwood and other coal companies operating in the New River field, **has returned from a trip to Atlantic City.**

W. D. Ord, head of the Empire Coal & Coke Co., with headquarters at Landgraf, **was a recent visitor in Washington, D. C.**

The Baltimore & Ohio has acquired the **Indian Run & Northern Railroad** from the **New England Fuel & Transportation Co.,** paying $50,000 and giving its obligations for the balance of $500,000. This road taps the Empire tract of 11,000 acres which was secured from the Elkins estate a few years ago.

The West Virginia Gas Coal Co. has perfected its organization with the election of Daniel Howard of Clarksburg as president; P. J. Reid as vice-president; J. B. Wyatt as secretary, D. T. Quinn as treasurer and J. Howard Henderson as general manager. The company is capitalized at $700,000. The company controls about 3,300 acres of high grade Pittsburgh coal and about 50 acres of land in fee on Cedar Creek in Otter District, Braxton County. Development work will be begun within a few weeks.

WISCONSIN

The first car of coal for the Brotherhood of Locomotive Engineers at Baraboo arrived at that place recently and was distributed among the membership of that order. The brotherhood owns extensive coal fields in Virginia, from which it will be able to supply its members with coal. All surplus will be sold to friends of engineers at cost.

CANADA

BRITISH COLUMBIA COAL OUTPUT DURING SEPTEMBER, 1922

Vancouver Island District

Mine	Net Tons
Western Fuel Corp., Nanaimo	67,122
Canadian Collieries, Comox	39,408
Canadian Collieries, Extension	18,823
Canadian Collieries, South Wellington	6,406
Granby Cons. M.S.&P. Co., Cassidy	21,155
Nanoose Wellington Collieries, Wellington	9,851
Old Wellington, Nanaimo	1,219
Total	163,984

Nicola-Princeton District

Middlesboro Collieries, Middlesboro	7,135
Fleming Coal Co., Merritt	3,894
Coalmont Collieries, Coalmont	14,699
Princeton Coal & Land Co., Princeton	2,715
Total	28,443

Crow's Nest Pass District

Crow's Nest Pass Coal Co., Coal Creek	36,997
Crow's Nest Pass Coal Co., Michel	31,228
Corbin Coal & Coke Co., Corbin	6,703
Total	74,928
Total, all districts	267,355

Operations at the **Dominion Coal Co.'s** coal pocket at St. John, N. B., were never heavier than at present. The force of employees has been doubled in the past few weeks. One steamer per week is arriving with bituminous coal.

The city council of **St. John, N. B.,** held off the purchase of coal for the city hall, water and sewerage building, police station and court building, etc., during the summer, and now finds itself in the plight of being unable to get hard coal at all.

Colwell Coal Co., of St. John, N. B., is preparing for an active winter and spring. The winter port season in St. John and Halifax will start about the middle of November when navigation on the St. Lawrence ceases, and extends until the middle of April, and first of May, when navigation reopens.

It is estimated that the **coal resources of British Columbia** total 73,874,942,000 tons. This includes an actual reserve containing 23,831,242,000 metric tons, and a probable reserve of approximately 50,043,700,000 metric tons. These figures were compiled recently with a view to arriving at some conception of the value of the natural resources of the province. The Normandale is a new colliery opened up near Nicola, B. C., and which made its first shipment last August. It is necessary to truck the product for two miles to the Kettle Valley Ry. William Ewart is in charge of operations. Vancouver City capital is invested.

WASHINGTON, D. C.

The personnel of the committee of anthracite operators who met the U. S. Coal Commission in informal conference last week is as follows: General Committee of Anthracite Operators: R. H. Williams, of Williams & Peters, New York City; W. J. Richards, president, Philadelphia & Reading Coal & Iron Co., Pottsville; W. H. Williams, senior vice-president, The Hudson Coal Co., New York City; J. F. Bermingham, president, Delaware, Lackawanna & Western Coal Co., New York City; A. B. Jessup, vice-president, Jeddo-Highland Coal Co., Jeddo, Pa.; S. D. Warriner, president, Lehigh Coal & Navigation Co., Philadelphia.

Traffic News

The Car Service Division of the American Railway Association, in an order just issued, **instructed railroad companies** in the Northwest, Central Western and Southwestern districts to **return at once box cars** which are now on their lines but which belong to Eastern roads. These cars are to be loaded and sent east as rapidly as possible. The Western carriers are told to confine the loading of grain, flour and other food products to box cars fit for that class of traffic and to discontinue using locally in station-to-station service, box cars belonging to Eastern roads. Such box cars are to be loaded and sent to home lines or to terminal markets where they will become available for Eastern loading of grain, flour and other food products.

Assignment of cars for railroad fuel loading, particularly in northern West Virginia, has become so general as to materially deprive mines loading coal for commercial purposes of any supply at all. Following in the wake of the decision of the United States Court at Cleveland, in which an injunction restraining the B. & O. and other railroads was refused, producers observe a more **general tendency to assign cars to the complete exclusion of commercial mines.** In other words, it is claimed that the railroads, where cars are assigned, are using their control over the supply to take an advantage of producers and to force them to furnish coal at such prices as the railroads may dictate. There are instances where the railroads have been able to secure a price of $2.50 per ton through ability to deprive mines of cars. The question of the assignment of cars will be threshed out before the I. C. C. at Washington on Nov. 15 and at the same time a hearing will be held on the question of mine ratings and car distribution rules.

Much interest attaches to the petition presented to the I. C. C. to **require the Virginian and the Chesapeake & Ohio railroads to pro-rate freight rates** from the Winding Gulf field to Western points and to establish an interchange of freight and coal equipment at Deepwater which is the western terminus of the Virginian Ry. and the point where it connects with the C. & O. Chiefly interested in the move is **Major W. P. Tams**, president of the Gulf Smokeless Coal Co., the Gulf Coal Co., the Wyoming Coal Co., the Covel Smokeless Coal Co. and others. Both roads are resisting the petition. As matters now stand, two rates are collected on all coal shipped westward from the Gulf region, the Virginian collecting one and the C. & O. the other. The Virginian is opposing the establishment of an interchange owing to the fact that it has only enough cars to supply its own mines to and from Tidewater piers.

Robert E. Quirk of the I. C. C. held the hearing on the moot rail rate case in Columbus, upon the **appeal of the railroads from the decision of the Ohio Utilities Commission** and the matter is now under advisement. W. D. McKinney, secretary of the Southern Ohio Coal Exchange was the principal witness as to matters of fact and the effect of the present rates while the railroads re-introduced their former evidence adduced before the Ohio commission. The question at issue is the reasonableness of the differentials between Ohio fields and the so-called inner and outer crescents of West Virginia following the 28 per cent reduction in coal rates ordered by the I. C. C.

Coal operators in southern Indiana, dependent upon the Southern Railroad for coal cars are planning to go to Washington to demand that the I. C. C. issue an order for the railroad to supply the mines with their share of coal cars. In case the operators are not successful in getting cars, a suit for damages will be filed. It is claimed by the railroad that its cars now are in the South where they have been used for several months and that a lack of motive power prevents bringing them north.

An application has been made to the I. C. C. by the **Staley System of Electrified Railways**, for the requisite authority to retain the excess earnings as allowed newly constructed lines. This petition sets forth a plan to construct an electrified railroad with 950 miles of main line and 225 miles of branch lines to serve points between the southwestern border of Colorado and a point on the Gulf of California. The principal purpose of the line is to **transport coal and coke from the Gallup-Durango fields of Colorado** to the mining and metallurgical industries of southern Arizona. The proposed line intends to serve the following places: Durango and Cortez in Colorado; Luna, Grants, Bluewater, Farmington and Aztec in New Mexico; Tucson, Casagrande, Phoenix, Florence, Winkleman, Safford, Solomanville, Clifton, Morenci and Metcalf, in Arizona.

Increased development of coal lands in West Virginia and Pennsylvania and the opening of a very rich coal field will be made possible by an extension of the **Morgantown & Wheeling R.R.** to Waynesburg, Pa., fourteen miles in length, for which application has been made to the I. C. C. The extension would be between Blacksville and Waynesburg. In the Scott's Run section, traversed by the M. & W., there are nearly 50 mines in operation, with a production of around 400 cars per day.

Federal Fuel Control Notes

H. F. Bell, foreign freight traffic manager of the Erie, recently designated as an assistant to the federal fuel distributor, will give especial attention to the matter of coal supplies for public utility companies. Individual complaints as to lack of coal, lack of coal cars and lack of transportation service will be given consideration by Mr. Bell, who will also keep in close touch with current railroad embargoes and recommendations issued by the Car Service Division of the American Railway Association to railroads as to interchange or movement of equipment.

Federal Fuel Distributor Spens was in Altoona last week for a **conference with the operators of central Pennsylvania** and made it plain that the domestic consumer of coal must receive his fuel supply at reasonable prices, commensurate with economic conditions. Among the operators present were: William Wetter, Philipsburg; Charles Maxwell, Morrisdale; J. S. Sommerville, Robertsdale; Thomas Kelly, Irvona, and Harry Scott, of Philipsburg. Secretary Charles O'Neil and W. A. Jones, statistician of the association, were also present.

Mr. Spens pointed out that because of the falling of prices in the central Pennsylvania field, there is little need for specific attention in that respect at this time. In the exercise of his authority, Mr. Spens pointed out that he may direct a re-routing of cars so that if there is a congestion on one route, the coal may be sent over another road. In this way and by other means within the scope of the act, he will aid in the providing of cars where they are most needed.

At a conference held with the Federal Fuel Distributor in Washington, members of **a committee of the National Coal Association**, of which J. C. Brydon, of Baltimore, is chairman, outlined the present transportation needs of the different bituminous-coal producing districts of the country. Fuel Distributor Spens assured the committee that remedial measures would be given his earliest consideration.

A. L. Humphrey, president of the Westinghouse Air Brake Co., Pittsburgh, has been appointed as a member of the advisory committee named by the federal fuel distributor to represent American industries in the present fuel emergency.

Lieutenant Commander E. A. Cobey, U.S.N., has jurisdiction over the district representatives of the federal fuel distributor stationed in the different bituminous coal fields. **C. J. Hepburn**, of Philadelphia, retained as general counsel, will give consideration to all legal matters. **Wayne P. Ellis** in addition to general statistical work, will give attention to the movement of coal to the upper Great Lakes region.

Recent Patents

Process of Collecting and Purifying Minerals. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C., 1,421,862. July 4, 1922. Filed April 9, 1920; serial No. 372,447.

Pulverized Fuel Furnace. Lars H. Bergman, Chicago, Ill., 1,421,898. July 4, 1922. Filed Jan. 7, 1920; serial No. 350,015.

Apparatus for Washing Coal and Separating It From Its Impurities. Henry P. Hoyle, Durham, England, 1,418,442. June 6, 1922. Filed Sept. 25, 1919; serial No. 326,407.

Differential Flotation Separator. Wilbur H. Peck, Los Angeles, Cal., 1,420,139. June 20, 1922. Filed July 20, 1921; serial No. 486,238.

Method of Cleaning Coal. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C., 1,420,163. June 20, 1922. Filed July 9, 1919; serial No. 309,642.

Process of Purifying Materials. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C., 1,420,164. June 20, 1922. Filed March 6, 1920; serial No. 363,797.

Process of Purifying Materials. Walter E. Trent, Washington, D. C., assignor to Trent Process Corp., Washington, D. C., 1,420,165. June 20, 1922. Filed Feb. 25, 1920; serial No. 361,230.

Rock Krill. Wm. A. Smith, Denver Colo., assignor to the Denver Rock Drill Mfg. Co., Denver, 1,424,188. Aug. 1, 1922. Filed Oct. 18, 1917; serial No. 197,261.

Apparatus for Drying Coal or Other Material. Thomas A. Goskar, Swansea, Wales, 1,424,565. Aug. 1, 1922. Filed Oct. 29, 1921; serial No. 511,389.

Automatic Revolving Dump. Edwin J. Best, Woodward, Ala., 1,424,871. Aug. 8, 1922. Filed July 14, 1919; serial No. 310,810.

Automatic Circuit Breaker. Herbert B. Kissinger, Lock Haven, Pa., 1,424,921. Aug. 8, 1922. Filed Nov. 27, 1920; serial No. 426,861.

Automatic Rolling Dump. Erskine Ramsay, Birmingham, Ala., 1,425,051. Aug. 8, 1922. Filed Feb. 17, 1921; serial No. 445,646.

Mining Machine. Harry A. Kuhn, Pittsburgh, Pa., 1,425,103. Aug. 8, 1922. Filed May 18, 1914; serial No. 839,325.

Safety Device for Mine Cages. George M Johnson, Jeannette, Pa., 1,425,203. Aug. 8, 1922. Filed Feb. 24, 1921; serial No. 447,593.

Surveying Instrument. Paul O. Harding, Carlton, Ore., 1,425,589. Aug. 15, 1922. Filed Dec. 14, 1920; serial No. 430,778.

Coal-Handling System. Franklin E. Arndt, Galion, Ohio, assignor to The Galion Iron Works & Mfg. Co., Galion, Ohio, 1,425,822. Aug. 15, 1922. Filed March 26, 1921; serial No. 455,901.

Mining Machine. H. R. Straight, Adel, Iowa, 1,425,913. Aug. 15, 1922. Filed March 31, 1919; serial No. 286,564.

Art of Treating Coal. Frank J. Root, Chicago, Ill., 1,426,012. Aug. 15, 1922. Filed April 7, 1919; serial No. 287,957.

Rotary Car Tipple. A. H. Wood, Kildav, Ky., assignor to Wood Equipment Co., Chicago, Ill., 1,426,027. Aug. 15, 1922. Filed June 15, 1917; serial No. 174,969.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at Urbana, Ill. Secretary, Martin Bolt, Springfield, Ill.

Pittsburgh Wholesale Coal Association will hold its annual meeting Nov. 14, at Pittsburgh, Pa. Secretary, W. R. Crowthers, Pittsburgh.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Harlan County Coal Operator's Association will meet Nov. 15, at Harlan, Ky. Secretary, E. R. Clayton, Harlan, Ky.

The National Industrial Traffic League will hold its annual meeting Nov. 15 and 16 at the Hotel Commodore, New York City. Secretary, J. H. Beek, Chicago, Ill.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.

Canadian Institute of Mining and Metallurgy, annual Western meeting Nov. 15-17, at Vancouver, B. C. Secretary-Treasurer, G. C. Mackenzie, Montreal, Quebec, Can.